



# HANDBOOK

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## Uparmored HMMWV Rollover Prevention and Egress Training

*Tactics, Techniques, and Procedures*

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Center for Army Lessons Learned (CALL)  
Fort Leavenworth, KS 66027-1350

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## Foreword

A study reported by *Helicopter World* (now *Defense Helicopter*) magazine in September 2000 said a person who is “egress trained” stands a 250 percent greater chance of survival than an untrained occupant when faced with a rollover egress emergency.

Teaching Soldiers, under controlled training conditions, the proper procedures to egress from an inverted high mobility multipurpose wheeled vehicle (HMMWV) will allow them to achieve self-control and overcome the natural fear and panic following the vehicle rollover. It will also reduce casualties and fatalities resulting from such rollovers, even when the vehicle is under attack, underwater, or on fire.

Driving an uparmored HMMWV is vastly different than driving a HMMWV without armor. At gross vehicle weight (GVW), which is an unloaded uparmored HMMWV with four crewmembers and their gear, rapid steering at speeds as low as 40 miles per hour (mph) increases the likelihood of a rollover. Stability is further reduced by road conditions, such as sand, debris, gravel, or rain; overloading the uparmored HMMWV; cargo placed high in the vehicle which raises the vehicle’s center of gravity; and driver inexperience or lack of training. Additionally, at 60 mph on smooth dry pavement an overloaded uparmored HMMWV has a braking distance of 15 vehicle lengths, compared to 13 vehicle lengths at GVW.

The focus of this handbook is on actions Soldiers can take to prevent rollovers from occurring in the first place, crew battle drills for rehearsal in the event of a rollover, and steps various commands can take to reduce uparmored HMMWV rollovers and rollover casualties while providing information and procedures that will reduce the risk of rollovers. This information is a “snapshot in time” of actions implemented prior to the publication of this handbook to prevent uparmored HMMWV rollovers and reduce casualties when they do occur. CALL will continue to collect and post on its Websites updates to this information with links to the sources.

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Colonel, Armor  
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Unless otherwise stated, whenever the masculine or feminine gender is used, both are intended.

**Note:** Any publications referenced in this handbook (other than the CALL newsletters), such as ARs, FMs, and TMs, must be obtained through your pinpoint distribution system.

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## Chapter 1

### Uparmored High Mobility Multipurpose Wheeled Vehicle (HMMWV) Rollover Prevention

Most uparmored HMMWV rollovers are preventable and actions can be taken to prevent or reduce severity when they occur. The U.S. Army's various commands and centers, as well as their sister service counterparts, have undertaken studies and identified steps to lower the number of HMMWV rollovers, and when rollover accidents do occur, to reduce the effect on combat readiness. This chapter is a guide to assist HMMWV users to prevent rollovers from occurring.

#### Section 1: Composite Risk Management (CRM)

##### 1.1. CRM is a decision-making process

CRM is a decision-making process used by leaders to mitigate risks associated with all hazards that can injure or kill people, damage or destroy equipment, or otherwise impact mission effectiveness.

a. A key element of risk decision making is determining what constitutes an acceptable level of risk. The primary premise of CRM is that it does not matter where or how the loss occurs, the result is the same — decreased combat power or mission effectiveness. However, risk or potential loss must be balanced against expectations or expected gains, and risk decisions must always be made at the appropriate level of command or leadership and based on the level of risk involved.

b. The guiding principles of CRM are as follows:

- (1) Integrate CRM into all phases of missions or operational planning, preparation, execution, and recovery.
- (2) Make risk decisions at the appropriate level. As a decision-making tool, CRM is only effective when the information is passed to the appropriate level of command for decision.
- (3) Accept no unnecessary risk unless the potential gain or benefit outweighs the potential loss.
- (4) Apply the process cyclically and continuously. CRM is applied continuously across the full spectrum of Army training and operations, individual and collective day-to-day activities and events, and base operations functions.

**1-2. The commander, leader, and/or trainer must ensure that CRM procedures are in place and used**

CRM is a five-step process:

a. **Step 1.** Identify hazards: A hazard is an actual or potential condition, situation, or event that can result in injury, illness, or death of personnel, as well as damage, loss, or destruction of equipment and property. It is also a situation or event that can result in degradation of capabilities or mission failure. Hazards exist in combat operations, stability operations, base support operations, training, garrison activities, and off-duty activities. Hazards can be associated with enemy activity, accident potential, weather or environmental conditions, health, sanitation, behavior, and/or material or equipment.

b. **Step 2.** Assess hazards to determine risk: Hazards and associated risks are assessed during the mission analysis, course of action (COA) development, and COA analysis steps of the military decision making processes (MDMP). This assessment must consider impact on mission and non-mission related aspects of the operation. The end result of this assessment is an initial estimate of risk for each identified hazard expressed in terms of extremely high, high, moderate, or low. There are three sub-steps in this step:

- (1) Assess the probability of the event or occurrence.
- (2) Estimate the expected result or severity of an event or occurrence.
- (3) Determine specified level of risk for a given probability and severity using the standard risk assessment matrix. (See Figure 1-1).

<b>Risk Assessment Matrix</b>				
<b>Severity\Probability</b>	<b>Frequent</b>	<b>Likely</b>	<b>Occasional</b>	<b>Seldom</b>
<b>Catastrophic</b>	<b>E</b>	<b>E</b>	<b>H</b>	<b>M</b>
<b>Critical</b>	<b>E</b>	<b>H</b>	<b>H</b>	<b>L</b>
<b>Marginal</b>	<b>H</b>	<b>M</b>	<b>L</b>	<b>L</b>
<b>E-Extremely High: Loss of ability to accomplish the mission</b> <b>H-High: Significant degradation of mission capabilities</b> <b>M-Moderate: Expected degraded mission capabilities</b> <b>L-Low: Little or no impact on accomplishing the mission</b>				

**Figure 1-1: Risk Assessment Matrix**



c. **Step 3.** Develop controls and make risk decisions: This step is accomplished during the COA development, COA analysis, COA comparison, and COA approval stages of the MDMP. Controls can take many forms, but normally fall into one of three basic categories:

(1) **Educational (awareness) controls.** These controls are based on the knowledge and skills of organizations, units, or individuals. They include the awareness of the hazard and control. Effective educational control is implemented through individual and collective training that ensures performance to standard.

(2) **Physical controls.** These controls are barriers, guards, or signs to warn individuals, organizations, or units that a hazard exists. Special controller or oversight personnel also fall into this category.

(3) **Avoidance/elimination controls.** These controls include positive action to prevent contact with an identified hazard or the total elimination of the hazard. Sources such as personal experience, accident data from the Risk Management Information System, after-action reviews, and lessons learned from similar past operations can identify possible control measures for specific events, operations, or missions.

(**Note:** The key to effective control measures is that they reduce or eliminate the identified hazard. Effective control measures must specify who, what, where, when, why, and how).

d. **Step 4.** Implement controls: Leaders and staffs ensure controls are integrated into standing operating procedures, written and verbal orders, mission briefings, and staff estimates. The critical check for this step is to ensure controls are converted into clear and simple execution orders. Implementing controls includes coordination and communication with the following:

(1) Appropriate senior, adjacent, and subordinate units, organizations, and individuals.

(2) Logistics capability organizations and civilian agencies that are part of the force or may be impacted by the activity, hazard, or its control.

(3) The media, non-governmental organizations, and private volunteer organizations when their presence impacts or is impacted by the force. Leaders must explain how the controls will be implemented. Examples include the following:

(a) Overlays and graphics.

(b) Drills for vehicle and aircraft identification.

(c) Rehearsals and battle drills.

- (d) Refresher training on threat and friendly vehicle identification for anti-armor and air defense weapons crews.
- (e) Orientation for replacement personnel.
- (f) Installation and maintenance of communications links for key civilian organizations.
- (g) Operating convoys with a prescribed minimum number of vehicles.
- (h) Provision to carry weapons and wear body armor and helmets when outside secure compounds.
- (i) Accident awareness, safety briefings, and warnings.

e. **Step 5.** Supervise and evaluate: Leaders and staffs ensure risk controls are implemented and enforced to standard and provide the means of validating the adequacy of the selected control measures in supporting objectives and desired outcomes. Like other steps of the CRM process, supervision and evaluation must occur throughout all phases of any operation or activity. This continuous process provides the ability to identify weaknesses and to make changes or adjustments to controls based on performance, changing situations, conditions, or events.

(**Note:** Appendix A is a sample rollover prevention risk management worksheet with instructions).

## Section 2: Rollover Preventive Measures

Rollovers are caused by speed, inadequate training, high centers of gravity, terrain and road conditions, driving habits, and local conditions. However, with proper driver training and actions, leader involvement, and composite risk management, the number of rollovers can be significantly reduced.

**Warning: Army tactical wheeled vehicles are not designed with rollover protection as a primary requirement. At the first sign of a vehicle rollover, remember your training and follow the procedures outlined in the graphic training aid.**

### 2-1. U.S. Army Forces Command (FORSCOM) rollover prevention measures

In February 2003, FORSCOM published rollover prevention measures. A summary of their findings follows.

- a. **Senior vehicle occupant.** The senior occupant is responsible for ensuring all personnel riding in or on a vehicle are wearing seatbelts and that all required equipment inside the vehicle is properly stored and secured.

b. **Driver training.** Train drivers in the following six important factors that can affect vehicle stability:

(1) **Vehicle center of gravity.** The height of a vehicle's center of gravity and the length of the wheelbase determine the vehicle's stability.

(2) **Load security.** Improperly secured loads can change a vehicle's center of gravity and its stability. Bulk tank trucks are inherently less secure as fluids can surge when trucks brake or go around curves, thereby altering the center of gravity. Also, a vehicle loaded with containers will have a higher center of gravity. It is important that payloads are secured as closely as possible to the lateral centerline of the truck or trailer bed. If the payload is not centered properly, the vehicle stability will not be equivalent when turning to both the right and left. See Figures 1-2 and 1-3.

(3) **Radius of curves and slope of roadways.** These calculations are important because they generate a centrifugal force that acts sideways on the vehicle, thereby decreasing vehicle stability.

(4) **Vehicle speed.** This factor probably contributes the most to vehicle instability because it magnifies problems presented by the other three factors. As the vehicle's speed increases, the centrifugal force or sideways force increases. Faster speeds also result in decreased driver response times. Of all the factors discussed above, the driver can exercise the most control over speed. When maneuvering through curves or sudden traffic situations, a vehicle with a high center of gravity can easily turn over. Sudden vehicle maneuvers are especially risky because the combination of speed and load shift makes the vehicle unstable.

(5) **Trailer towing.** Vehicles towing trailers are much more prone to roll over, especially in curves and during sudden steering maneuvers, as a result of the exaggerated motion of the trailer.

(6) **Vehicle condition and preparation.** It is critical the vehicle is in good operating condition before starting a mission. Pay particular attention to the condition of the tires and tire air pressure. Properly performed preventive maintenance checks and services (PMCS) is the best way to control this potential hazard.

c. Examples of matching the truck to the load and proper loading areas are as follows (Figures 1-2 and 1-3):

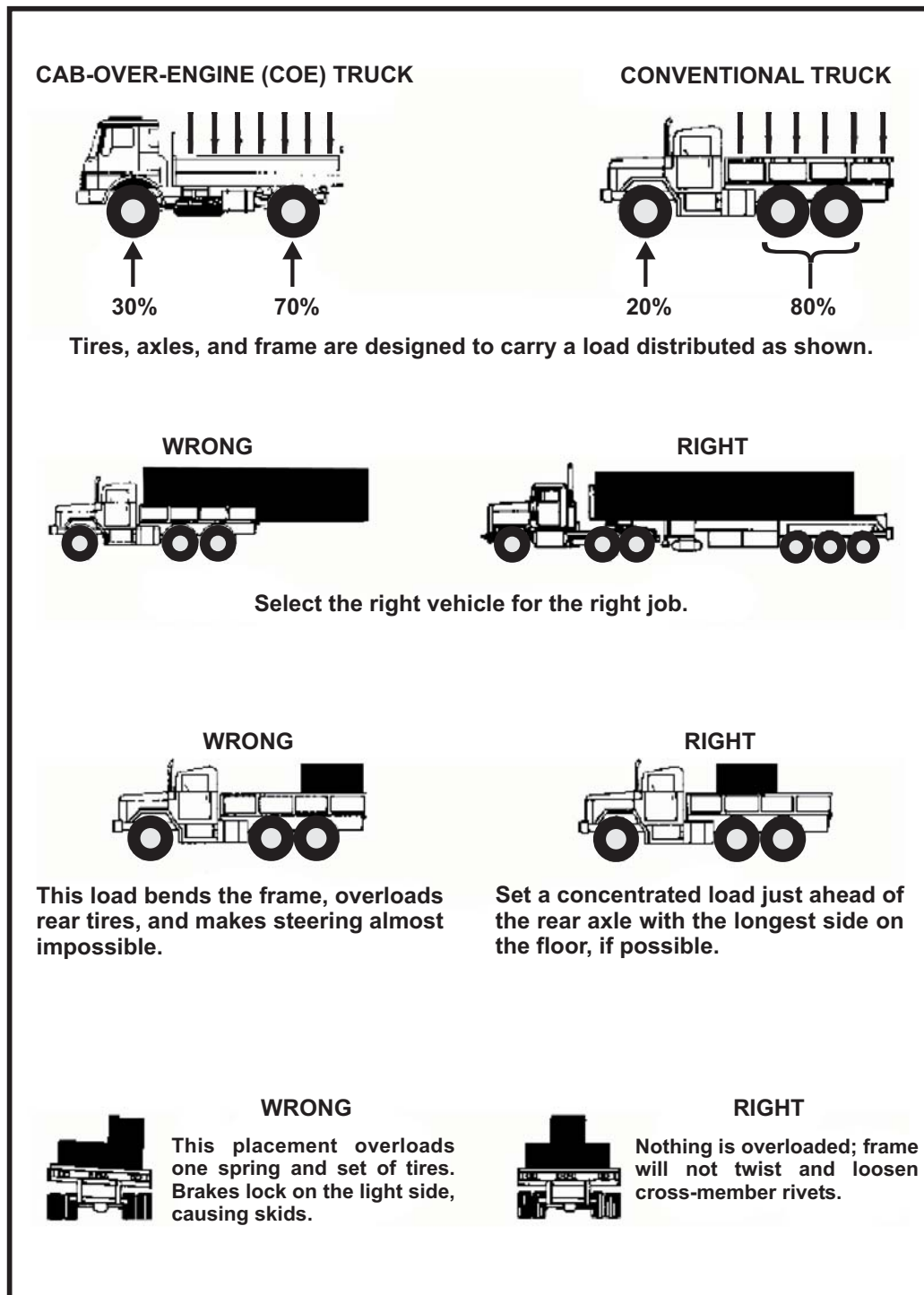
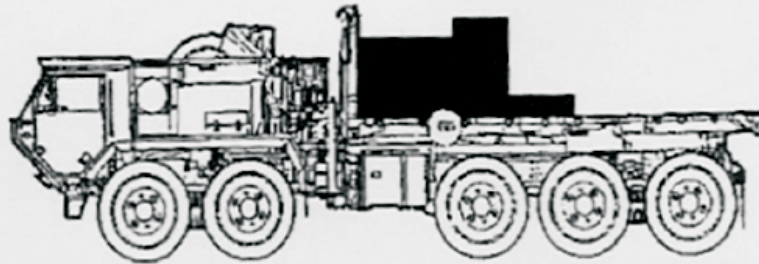


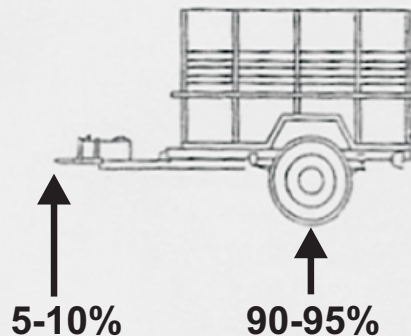
Figure 1-2: Proper vehicle and load placement



**PLS**

Place cargo tight against  
front end wall of flatrack.

**PLS ONLY**



**Trailer**

Distribute trailer load between  
the axle and the pintle.

**Figure 1-3: Proper cargo and load distribution**

d. Driver risk management control measures. Every driver can take eight basic steps to prevent or reduce the potential for rollovers.

(**Note:** Commanders should include safety tips in initial and sustainment tactical wheeled vehicle operator training).

(1) Adjust the vehicle speed to allow a “speed cushion” for maneuvering (at least 10 miles per hour below the posted speed limit is recommended when approaching a curve).

(2) Slow down.

(3) Observe speed limit and check speedometer to ensure vehicle is below the posted speed.

(4) Do not rely on a “seat of the pants” sense to judge speed and vehicle maneuverability. New suspensions and chassis set-ups give a false sense of control.

(5) Slowly accelerate out of the curve.

(6) Maintain a “space cushion” (distance between the vehicle and other traffic) so the driver has a safe maneuvering speed to compensate for errors in judgment, weather, road conditions, and poor driving by other motorists.

(7) Avoid the temptation to brake hard if the rear of the vehicle or trailer “slides out.” Instead, if there is clearance, attempt to apply steady throttle, allowing the vehicle to straighten itself. Braking will accelerate the skid, contributing to loss of control and rollover.

(8) Risk management procedures. Personnel are required to wear seatbelts. All U.S. Army personnel should follow unit standing operating procedures/tactical standing operating procedures and be in proper uniform when operating or riding as a passenger in military vehicles. It is recommended when operating tactical military vehicles during field training, driver’s training, and tactical operations that the Kevlar helmet be worn at all times with chin strap properly secured.

## **2-2. Rollover survivor comments**

The following comments from a rollover survivor echo the FORSCOM procedures and provide additional guidance.<sup>1</sup>

a. Watch for sharp curves and steep slopes which generate centrifugal force that act sideways on the vehicle increasing the chance for rollover. Driver action: slow down and steer smoothly.

b. Many rollovers occur when the driver panics and jerks the steering wheel. At highway speeds jerking the wheel may cause the vehicle to slide sideways and roll over. Driver action: slow down and steer smoothly.



c. Know proper maneuvering.

(1) If you drive off roadway, step off the gas and the brake. Grasp the wheel firmly but not in a death grip.

(2) If two wheels are off, center the vehicle on the center of the edge of the road, remain calm, and maintain control. Check for a clear road and smoothly steer your vehicle back on to the road.

(3) If four wheels are off, run parallel to the road about two feet off, remain calm, and maintain control. Check for a clear road and steer your vehicle back on to the road. Make the tire tread contacts the edge of the road but do not scrub the inside of the tire with the edge of the road.

d. When a vehicle goes off the road the vehicle can overturn when it strikes a ditch or an embankment or is tripped by soft soil. Driver action: slow down and use caution on rural roads or roads with soft or no shoulders.

e. Pay particular attention to vehicle condition, tire pressure and loading during PMCS to reduce potential hazards, such as worn or improperly inflated tires that can increase the risk of rollover.

f. Do not overload the vehicle (load heavier items low in the vehicle; a high center of gravity increases the chance for a rollover).

g. Improperly secured loads can shift and become hazards within the vehicle and increase the chance of rollover.

h. Vehicles towing trailers are much more apt to roll over, especially in curves and during sudden steering maneuvers due to exaggerated motion of the trailer. Driver's action: Adjust speed accordingly.

## Section 3: Accidents Involving HMMWVs

### 3-1. Army HMMWV Seatbelt Safety Message (26 April 2006)

Recently the Army experienced a tragic accident involving a variation of the HMMWV family of vehicles. This vehicle utilized a two-point seatbelt restraint system common to older versions of the HMMWV. What makes this accident especially tragic is that the driver of the vehicle was wearing his seatbelt during the course of the accident. Unfortunately, he was not wearing it correctly.

The Army recognized a significant hazard associated with the standard two-point seatbelt restraint system in the HMMWV. While the seatbelt is retractable, it does not contain an inertial stopping device that most civilian vehicles have as standard equipment. This means that the user must remove all slack from the retractor and tighten the seatbelt snug across the body. Failure to do so prevents the seatbelt from performing as designed and endangers the user. Instructions on proper wear of the seatbelt and warnings about the hazards associated with this seatbelt are posted in TM 9-2320-280-10.

The two-point seatbelt system is currently being phased out. Modification Work Order 9-2320-280-35-2, dated 1 Jun 96, outlines the procedures for installation of the three-point seatbelt restraint system for basic versions of the HMMWV. Until the completion of these modifications, commanders should do the following:

- Warn personnel of the hazards associated with the two-point seatbelt restraint system.
- Train personnel on the correct procedures for use of the two-point seatbelt restraint system.
- Rigidly enforce the requirements of AR 385-55 for mandatory seatbelt use in all vehicles so equipped.

Additionally, commanders should review maintenance and inspection procedures for all vehicles containing the two-point seatbelt restraint system. Ensure all warnings are posted (on the vehicle and in applicable TMs) and adhered to during all types of operations.

Gene M. LaCoste  
Brigadier General  
Director of Army Safety

(**Note:** Reference CRC Version 2.0, 22 March 2006, *Combined Safety Smart Card* for information on the HMMWV personal restraint system).

## Section 4: Leader Actions

There are many good programs leaders can establish to reduce rollovers. Designated-driver programs and unit on-the-spot safety inspections are good starting points.

a. Commanders should:

- (1) Know their Soldiers.
- (2) Require disciplined, legal behavior.
- (3) Conduct individual Soldier risk assessments.
- (4) Provide incentives for safe performance.
- (5) Provide rollover avoidance and remedial driver training programs.
- (6) Hold subordinate leaders accountable for leader intervention.

b. Squad leaders and platoon sergeants are the first line of defense. They should:

- (1) Know their Soldiers' driving habits.
- (2) Ensure that deficiencies identified in vehicle inspections are corrected and then re-inspect.
- (3) Recommend when driving privileges should be revoked.
- (4) Counsel individuals on the repercussions of unsafe driving.
- (5) Conduct periodic tailgate safety briefings to small groups.
- (6) Encourage Soldiers to look out for each other.
- (7) Give all the drivers sufficient driving practice with loaded vehicles. If they have not been driving for an extended period of time, use the "crawl, walk, run" method of training.

## Section 5: Teamwork

Teamwork is another key to successful rollover prevention:

- Work as a team.
- Maintain crew integrity.
- Communicate with the driver.
- Identify terrain or conditions favorable for a rollover.

- Use a guide near bodies of water.
- Position team members within the vehicle.

**Endnote**

<sup>1</sup> U.S. Army Combat Readiness Center Ground Video, *Letters From War: Up-armored HMMWV Rollovers* (FOUO - AKO Login required), CSM Butler, 16th MP Bde (ABN), Fort Bragg, NC.

## Chapter 2

### Uparmored High Mobility Multipurpose Wheeled Vehicles (HMMWV) Rollover Battle Drills

HMMWVs are fitted with armor as a means of reducing casualties from improvised explosive devices (IEDs) and small arms fire. Currently trucks in Iraq are not even allowed on the main and alternate supply routes unless they have Level I factory-produced armor (armor integrated into nearly every aspect of construction) or Level II add-on armor (ballistic steel plates and bulletproof windows). In addition, welding shops are adding “T-cups,” additional armor surrounding the ring mount to protect the gunners. The additional protection the armor provides U.S. Soldiers from IEDs and small arms fire has its price. Uparmored HMMWVs are extremely top heavy and vehicle rollovers have become a common and deadly occurrence.



**Figure 2-1: Rollovers and their aftermath present an ongoing challenge for U.S. forces**

Knowing what actions to take immediately prior to a potential rollover and immediately following a rollover are vital to the safety of the vehicle’s crew. Rollover battle drills, based on unit standing operating procedures (SOP), routinely performed by the vehicle’s crew, create understanding of and how to react to the violent chaos that results when a rollover has occurred. This chapter provides sample battle drills to assist units in creating their own drills to prepare their crews for rollovers.

**Safety Note: Never attempt to leap from a rolling vehicle. Except for the gunner, ensure all vehicle occupants have their seat belts fastened. Ensure the gunner remains at the name tag defilade position when in the gunner’s turret. Ensure all gear and cargo are secured.**

## Section 1: Uparmored HMMWV Crew Rollover Battle Drills

### 1-1. Rollover drill, not in water

This drill begins when the driver feels he has lost control of the vehicle and anticipates a rollover, but not into water. (See Appendix A: Graphic training aid [GTA] 55-03-30).

a. Driver:

- (1) Releases the accelerator.
- (2) Shouts, “**Rollover, Rollover, Rollover!**”
- (3) Keeps hands on the steering wheel with arms extended but not locked.
- (4) Plants feet firmly on the floor.
- (5) Tucks head and chin into chest and braces for impact.

b. Vehicle commander (VC):

- (1) Shouts, “**Rollover, Rollover, Rollover!**”
- (2) Uses left hand to pull gunner into the vehicle.
- (3) Uses left hand and arm to hold the gunner in place.
- (4) Plants feet firmly on the floor while holding onto a stationary object.
- (5) Tucks head and chin into chest and braces for an impact.

c. Gunner:

- (1) Shouts, “**Rollover, Rollover, Rollover!**”
- (2) Pushes/pulls self down into the vehicle.
- (3) Holds onto a stationary object.
- (4) Tucks head and chin into chest and braces for impact.
- (5) **Does not place hands or fingers on turret.** Turret’s movement can cause additional injuries.

d. Other crewmembers (if present):

- (1) Shout, “**Rollover, Rollover, Rollover!**”
- (2) Assist VC pull to gunner into the vehicle and hold him.



- (3) Tuck heads and chins into chests and brace for impact.
- (4) Hold onto a stationary object.

## 1-2. Rollover drill in water

When water entry is imminent, whether or not the potential for a rollover exists. (See Appendix A: GTA 55-03-30).

- a. When in the vicinity of water and tactical conditions permit, VC:
  - (1) Informs vehicle crew that the vehicle is operating around water hazards.
  - (2) Reminds the crew of the risk mitigating measures.
  - (3) Unlocks the combat door locks.
  - (4) Ensures all loose gear and cargo are secured.
- b. Driver:
  - (1) Releases the accelerator and controls the entry by steering into the body of water.
  - (2) Yells “**Water, Water, Water!**”
  - (3) Keeps hands on the steering wheel with arms extended but not locked.
  - (4) Plants feet firmly on the floor.
  - (5) Tucks head and chin into chest and braces for impact.
- c. VC:
  - (1) Shouts, “**Water, Water, Water!**”
  - (2) Uses left hand to pull gunner into the vehicle.
  - (3) Uses left hand and arm to hold the gunner in place.
  - (4) Plants feet firmly on the floor while holding onto a stationary object.
  - (5) Tucks head and chin into chest and braces for an impact.
- d. Gunner:
  - (1) Yells, “**Water, Water, Water!**”
  - (2) Pushes/pulls self down into the vehicle.

- (3) Slides feet in the direction of the vehicle's movement.
  - (4) Plants feet firmly on the floor while holding onto a stationary object.
  - (5) Tucks head and chin into chest and braces for impact.
  - (6) **Does not place hands or fingers on turret.** Turret's movement can cause additional injuries.
- e. Other crewmembers (if present):
- (1) Shout, **“Water, Water, Water!”**
  - (2) Assist VC to pull gunner into the vehicle and hold him.
  - (3) Tuck head and chin into chest and brace for impact.
  - (4) Plant feet firmly on floor while holding onto a stationary object.

### **1-3. After rollover drill (not in water)**

- a. Each crewmember, whether driver, VC, or rear crew:
- (1) Braces one hand on the ceiling.
  - (2) Unbuckles seatbelt with other hand and immediately puts both hands on ceiling.
  - (3) Slides out of seat and sits up.
  - (4) Disconnects headset.
  - (5) Turns off motor (driver).
  - (6) Orients self on the nearest door.
  - (7) Unlocks combat door locks.
  - (8) Opens door; if it does not open, try a different door.
  - (9) Exits with weapon.
  - (10) Assists remaining crew to exit.
  - (11) Establishes security.
  - (12) Checks for fires.
  - (13) Activates fire extinguisher, as needed.
  - (14) Recovers sensitive items.

- (15) Provides first aid.
- (16) Assists in vehicle recovery.

b. Gunner:

- (1) Disconnects headset.
- (2) Orients self on the nearest door.
- (3) Unlocks combat door locks.
- (4) Opens door; if it does not open, tries a different door.
- (5) Exits with weapon.
- (6) Assists crew to exit.
- (7) Establishes security.
- (8) Checks for fires.
- (9) Activates fire extinguisher, as needed.
- (10) Recovers sensitive items.
- (11) Provides first aid.
- (12) Assists in vehicle recovery.

**1-4. If vehicle rolls onto side**

a. Lower level Soldiers, if able:

- (1) Unbuckle seat belts.
- (2) Assist upper Soldiers to unfasten seat belts then carefully lower.

b. Crew, if doors are jammed:

- (1) Exit through hatch or cargo area if possible.
- (2) Work as a team to open jammed doors.

**1-5. After rollover drill (in water)**

a. All crewmembers:

- (1) Turn off motor (driver).
- (2) Disconnect headsets.

- (3) Unbuckle seatbelt with other hand and immediately put both hands on ceiling.
  - (4) Unlock combat door locks if not already unlocked.
  - (5) Decide whether or not to remove personal equipment.
  - (6) Exit the vehicle.
  - (7) Assist each other to exit and secure weapons.
  - (8) Assess injuries.
  - (9) Get to safest shore.
  - (10) Provide security.
  - (11) Account for other crewmembers.
  - (12) Provide/seek first aid.
  - (13) Retrieve weapons, ammunition, and sensitive items.
  - (14) Assist with vehicle recovery.
- b. VC:
- (1) Accounts for weapons, ammunition, and sensitive items
  - (2) Requests medical support, if required.
  - (3) Reports accident.

#### **1-6. Rescue wrench**

To gain access to a HMMWV with combat doors locked, use the emergency rescue wrench (on M114 only).

- a. Remove emergency rescue wrench from storage position behind the right rear passenger seat on the “C” portion.
- b. Identify door that allows immediate access to conscious occupant.
- c. Locate two groups of three bolts at the rear of the door. (**Note:** One bolt protrudes in each group).
- d. Remove countersunk bolts first, then the protruding bolt. Complete one group at a time. (**Note:** If the bolt head breaks, proceed to the next bolt – the door can still be opened).

- e. Open door with handle.
- f. Proceed to next door.

### **1-7. Water rescue recovery drill**

In the event one or more crewmembers do not personally egress from the overturned vehicle:

- a. Rescuers secure the accident site.
- b. Stay in contact with the vehicle, hold onto the vehicle, and kick/swim to a high point in buddy teams.
- c. Rescuers tie a rope/cable to the vehicle to aid rescue.
- d. Open doors and hatches, using the emergency rescue wrench if necessary.
- e. If doors and hatches are not accessible, rescuers must immediately use all available means to turn vehicle on its side to gain access to the turret.
- f. Seek out the highest point on the vehicle from which to rescue trapped occupants.
- g. Ensure all survivors have air and are able to breathe.
- h. Check for other injuries and apply first aid.
- i. Remove personal equipment, including body armor.
- j. Carefully move injured personnel to the highest point on the vehicle.
- k. Evacuate from vehicle high point to safest location, depending on:
  - (1) Enemy situation
  - (2) Water level and flow
  - (3) Water temperature
  - (4) Distance to water's edge
  - (5) Anticipation of rescue

### **1-8. Accident/incident report**

- Who (unit or individual)?
- What (accident or combat)?
- Where (6 digit universal transverse mercator [UTM] grid)?

- When (date/time/group)?
- How (What caused the rollover [speed, visibility, other]; cause of injuries or deaths)?

Follow up initial report as soon as possible with information regarding:

- Weather conditions
- Seatbelts worn by each occupant
- Fatigue/sleep prior to the accident
- Was driver able to see hazard/other vehicle?
- Operator training/experience/license

Complete accident report form (DA Form 285 AGR) and forward to higher headquarters.

## **Section 2: Area Security Battle Drill**

A vehicle rollover can cause a convoy to halt for long periods of time and creates a dangerous situation for the Soldiers involved. Stopped trucks are easy targets for the enemy and attending to a rolled-over vehicle brings Soldiers out of their own vehicles and renders them exposed and vulnerable. Security is critical during vehicle recovery operations.

### **2-1. Convoy/vehicle security drill**

The convoy commander (CC) secures the site; ensures area has been cleared of additional dangers to include IEDs, mortar rounds, and field artillery rounds; and establishes security.

a. Secure the site: (All vehicles stop).

(1) CC:

- \* Assesses the threat/situation.
- \* Establishes 360-degree security in two-person teams.
- \* Conducts traffic control point operations near and far.
- \* Notifies convoy's headquarters of actions taken.

(2) Gun truck crews remain vigilant and provide additional security. Drivers and gunners remain in the gun trucks at all time. The driver of the gun truck stays behind the wheel with the radio.



- b. Once the CC determines the area in the vicinity of the rolled over vehicle is secure, casualty evacuation (CASEVAC) and recovery operations may begin.

### **Section 3: CASEVAC Battle Drill**

#### **3-1. CASEVAC is defined as the removal of casualties from a high-risk situation or area**

Personnel will not be able to provide immediate aid until fire superiority has been established. Once fire superiority is achieved, extraction and movement of casualties often require field expedient procedures.

- a. CASEVAC drill:

- (1) The A&L (aid and litter) team moves forward blowing its horn continuously to warn dismounts of the vehicle's approach and position its vehicle on the non-contact side of the vehicle containing casualties. The A&L team then extracts the casualties and loads them immediately into the A&L vehicle as safely and quickly as possible.
- (2) Treatment of casualties does not occur inside the threat area except for emergency treatment to prevent loss of life and then only as the A&L vehicle is departing the area.
- (3) The CC must decide what other vehicles in the convoy will accompany the A&L vehicle (with casualties on board) to a floating rally point (floating rally points will be two to six miles away from the contact area). At a minimum, there will be one additional vehicle to provide security, with a leader, combat lifesaver (CLS), and Single Channel Ground and Airborne System capability. If available, an electronic countermeasure truck will also escort the CASEVAC vehicles.

- b. CASEVAC techniques and procedures:

- (1) A CLS or medic should not be assigned to an A&L team unless the unit has sufficient CLSs to provide first line treatment at the rally point. Personnel assigned this task should have basic CLS knowledge/training in order to provide basic treatment at the casualty collection point.
- (2) Personnel dismounted inside the contact zone will initially engage the enemy threat. Due to the risk of more casualties, treatment or CASEVAC is second in priority.
- (3) To permit rapid pick-up and safe transportation of casualties, A&L team vehicles should be free of extraneous equipment.

(4) To ensure a quick exit from the contact area, A&L and recovery vehicle drivers will not exit their vehicles in the contact zone.

(5) A&L personnel will not separate themselves from their weapons during CASEVAC operations.

(6) Once the casualties are loaded or the vehicle recovered, A&L and recovery teams should contact convoy leadership when ready to move.

### **3-2. 9-Line medical evacuation request**

Line 1: 6 digit universal transverse mercator grid location of pickup site

Line 2: Radio frequency, call sign, and suffix of requesting personnel

Line 3: Number of patients by procedure:

- Urgent, priority, routine
- Urgent-loss of life, limb, eyesight within two hours
- Priority-loss of limb within four hours
- Routine-evacuation within 24 hours

Line 4: Special equipment required: none, hoist, or stokes litter

Line 5: # Patients by type (litter/ambulatory)

Line 6: Security of pick-up site (What possible/known threat is in the area?)

Line 7: Method of marking pick-up site (near/far recognition devices)

Line 8: Patient nationality and status (coalition military, U.S. contractor, non-U.S. contractor, enemy prisoner of war)

Line 9: Chemical, biological, radiological, nuclear, high-yield explosive contamination

## **Section 4: Rolled Uparmored HMMWV Recovery**

### **4-1. Vehicle recovery drill**

Recovering the rolled vehicle should be conducted as safely and expeditiously as possible. If hasty recovery methods will work, they should be used.

- a. Ensure the area is secured prior to attempting to recover a rolled vehicle.

- b. Identify and evaluate damage to the rolled vehicle.
  - (1) Inspect the entire vehicle to ensure that there are no multiple mechanical and structural faults with the vehicle.
  - (2) Identify the types of equipment and personnel necessary to extract the vehicle.
  - (3) If the vehicle is not recoverable, through self recovery or hasty recovery (chains or cables already rigged on the recovery vehicle), or the CC determines the vehicle cannot be extracted and rolling after 30 minutes, the CC will inform the convoy's headquarters of the need for vehicle recovery.

#### **4-2. Vehicle recovery request**

- a. Number of vehicles to be recovered.
- b. Type of vehicle(s).
- c. Vicinity grid location.
- d. Brief description of breakdown (mention any limiting terrain and what route the convoy is on).
- e. Movement Tracking System number.
- f. FM frequency of the convoy and integrated communications channel.
- g. Your call sign.
- h. Clear and detailed description of the problem (e.g., rollover).
- i. Whether the vehicle is rollable on the front end or back end.
- j. Existing security posture.
- k. Person making request (external support).
- l. Digital non-secure voice terminal number of person making request (external support).

#### **4-3. Vehicle recovery procedures**

**Note:** The CC or maneuver commander on the ground is key to determining the recovery assets required in order to get the proper equipment on the ground.

- a. Recovery team positions on the safe side of the rolled vehicle.
- b. CC dismounts and assesses the disabled vehicle, looking for any safety reason why hasty recovery (chains, tow-straps, or cables, not tow bars) cannot be accomplished.

- c. If the vehicle can be safely recovered, CC guides the recovery vehicle into a position that best allows a hasty hook-up.
- d. If the vehicle cannot be hastily recovered, it will be recovered by whatever means required and loaded on a trailer for evacuation.
- e. Leaving a rolled vehicle must be cleared first by the S3 and then the battalion commander. If approved, it will be cleared of all sensitive items, weapons, ammunition, equipment, and supplies.

## Chapter 3

### Model High Mobility Multipurpose Wheeled Vehicle (HMMWV) Egress Assistance Trainer (HEAT) Program of Instruction (POI)

This chapter is a model HEAT training program.

**Safety Note: Unauthorized activation of the HEAT may endanger life.**

#### Section 1: General

##### 1-1. Purpose

- a. The purpose of the HEAT is to simulate an uparmored HMMWV rollover or roll to left or right, then train the vehicle occupants to successfully egress from the rolled HMMWV by emphasizing teamwork through crew/battle drills.



**Figure 3-1: A trailer-mounted HEAT.**

- b. HEAT tactics, techniques, and procedures train Soldiers on how to avert rollover injuries and preserve manpower and equipment.
- c. The HEAT safety philosophy is to train, with an acceptable level of risk, personnel who travel in uparmored HMMWVs to automatically react to and survive a rollover, then expeditiously egress the inverted vehicle.
- d. Unfortunately, the HEAT cannot precisely replicate the violence inside the vehicle during a rollover.
- e. As new materiel is developed for the HMMWV, those who manage the HEAT should ensure parity between the HEAT and the HMMWV fleet.

## **1-2. Duties and responsibilities**

- a. The commander ensures adequate resources are allocated to support an effective HEAT training program.
- b. The operations officer has staff responsibility for developing, coordinating, fielding, and supervising the HEAT training program, to include:
  - (1) Maintaining the currency and relevance of the HEAT standing operating procedures (SOP).
  - (2) In concert with Command Safety Office and Directorate of Logistics (DOL), ensuring an inspection and maintenance program is conducted on the HEAT apparatus and facility.
  - (3) Ensuring users conduct pre-operation, during operation, and post-operation preventative maintenance and safety checks to ensure the HEAT is functioning properly.
  - (4) Coordinating weekly, monthly, quarterly, and yearly inspections and maintenance with DOL through the submission of work orders requesting service as maintenance standards are identified.
  - (5) Coordinating procurement of additional training aids to support the HEAT training program with simulated realistic training.
  - (6) Overseeing the associated risk management process.
- c. The safety officer will:
  - (1) Assist with establishing and implementing the command's HEAT training, inspection, and safety programs.
  - (2) Review and monitor the program and HEAT device for safe operations.
  - (3) Review accident experience trends and provides an analysis to appropriate agencies/organizations as it pertains to the HMMWV and HEAT in order to assist in maintaining the HEAT training program's currency and relevance.
  - (4) Assist in any investigation where a Soldier is injured while conducting HEAT training in order to mitigate the risk for future use.
- d. Subordinate commanders will:
  - (1) Develop training plans in order to prepare Soldiers to conduct effective driving and HEAT training.



- (2) Complete a risk assessment in accordance with (IAW) Field Manual (FM) 3-100.12, prior to conducting HEAT training with their unit (see Appendix H).
- (3) Determine which individuals attend the Intermediate and Advanced HEAT phases (see Table 3-1) and ensure the HEAT Training Participant Screening Sheet (see Appendix C) is completed for each participant. Ensure each participant conducts the required training and meets all prerequisites IAW this program of instruction.
- (4) Ensure personnel attending the HEAT training are medically fit to participate in this training. Commanders will screen Soldiers prior to HEAT training for any profiles or medical conditions that may preclude participation in the training. Conditions such as previous neck and back injuries or pregnancy will preclude Soldiers from training.
- (5) Notify those in their charge of the hazards associated with HEAT training (see Section 3 and Appendix E).
- (6) Ensure personnel attending HEAT training are properly equipped, including protective eyewear.
- (7) Encourage personnel selected to attend the HEAT training to accomplish any directed or recommended prerequisite training identified in paragraph 2-3a.
- (8) Ensure personnel understand the drop on request (DOR) and training time out (TTO) policies (see Appendix D) prior to training on the HEAT.
- (9) Ensure any injuries or mishaps occurring in the HEAT are reported IAW HEAT Class E Mishap Reporting Form (see Appendix F).
- (10) HEAT trainees participate in feedback and comments on the HEAT training using the HEAT Comment and Feedback Card (see Appendix G).

e. Commanders, master driver trainers, and supervisors of those attending the HEAT training will:

- (1) Read and be familiar with this POI.
- (2) Review the HEAT Risk Management Worksheet (see Appendix H) and make any local expansions necessary for compatibility with the unit mission essential task list (METL).
- (3) Ensure the HEAT preventive maintenance checks and services (PMCS) and prescribed maintenance are performed (see Appendix I).
- (4) Ensure parity between the HEAT and the HMMWV operational fleet as new equipment for the HMMWV is fielded.

- (5) Ensure communications are established in case of emergency.
- (6) Ensure evidence of motion sickness is policed IAW paragraph 3-2.
- (7) Ensure training records are completed IAW paragraph 3-12.
- f. The unit master driver trainer will be the functional officer in charge (OIC)/noncommissioned OIC, working with technical input from the other uniformed members and/or contractors on site.

## **Section 2: HEAT Training Requirements**

This section delineates the required training equipment and aids, provides an overview of the training, and establishes priorities for use of the HEAT.

### **2-1. Required equipment and training aids**

- a. Graphic training aid (GTA) 55-03-030 *HMMWV Uparmored Emergency Procedures Performance Measures* (see Appendix B).
- b. HEAT, including padding for beneath device (see paragraph 3-10d).
- c. Rubber mallet (to seat the troop stands in the HEAT during setup).
- d. Whistle, air horn, or similar signal device.
- e. HEAT written tests and answer sheets (see Appendix J).
- f. Combat lifesaver (CLS) and lifesaver/first aid equipment.
- g. Motion sickness supplies (medical/hazardous waste):
  - (1) Shop (wet/dry) vacuum.
  - (2) Hose and water source.
  - (3) At least two one-gallon pails.
  - (4) Latex (or equivalent) gloves.
  - (5) Shop rags/towels.
  - (6) Motion sickness bags.
  - (7) A self-closing trash can and plastic trash bags.
- h. Recommended knee-pads and elbow-pads (flailing and egress injury abatement).
- i. Safety glasses or goggles (mandatory for eye injury abatement).

- j. Fire extinguisher (Class A, B, C – at least 10 lb).
- k. Flashlights (at least two).
- l. Styrofoam blocks (simulated ammo cans, cargo, etc.).
- m. Hazardous material absorbent material to recover any oil and/or grease that may leak from the HEAT device and/or to clean up the effects of motion sickness.
- n. When not used with building-supplied power, an external generator (at least ten kilowatts [kw]), a grounding stake, and a sledge will also be required).

## **2-2. Training uniform and equipment**

HEAT trainees will report wearing boots, Army combat uniform/desert combat uniform, protective eye wear (mandatory), hearing protection, helmet, body armor, personal and any crew-served weapon(s), gas masks (as required by the unit), and any other equipment that would typically be worn while riding in an uparmored HMMWV in a combat zone.

## **2-3. Training requirements**

Primary phase training and annual refresher training are mandatory for HMMWV crewmembers. Primary training will be scheduled at least once during each training year and include tasks outlined in 4-3.

- a. Units mobilized for deployment into the Coalition Forces Land Component Command area of responsibility are encouraged to accomplish at least the Primary phase of the HEAT training before arriving in theater.
- b. Commanders may select crews to attend Intermediate and/or Advanced training, as training schedules and operation mission loads permit. Crews may conduct Primary, Intermediate and Advanced phases of training in the same session (see paragraph 4-2a[2]).
- c. To keep training current, personnel are required to complete annual academic refresher training (see Table 3-1) that includes Academic Phase Learning Objectives (see paragraph 4-3).
- d. Crews who have completed Intermediate and Advanced training will be required to participate in a full HEAT refresher/recurrent practical exercise (see Table 3-1) every three years. Commanders may conduct refresher/recurrent training more frequently, subject to training schedules, operational mission loads, and availability of the HEAT.

### Section 3: HEAT Safety Considerations

This section defines and delineates the safety considerations inherent to operation of the HEAT and highlights key safety considerations in operation of a HMMWV.

**Safety Note: It is never advisable to exceed the limitations specified in the operator's manual for any vehicle.**

#### 3-1. Medical pre-screening

While guidelines have not been developed for the medical pre-screening of crewmembers scheduled for HEAT training, commanders should prevent any Soldier or civilian under their control from undergoing HEAT training if the commander feels any pre-existing medical conditions could be exacerbated by participating.

#### 3-2. Safety hazard awareness notice

Acknowledge potential for mishap during HEAT training. In order to ensure the safety of staff and HEAT training participants, be alert for those who appear to be experiencing difficulty. Do not hesitate to exercise the TTO policy (see Appendix D). Motions experienced in the simulator are not abrupt, but they are extraordinary compared to what would normally be experienced in a motor vehicle. In the event of motion sickness, the individual or the individual's unit is responsible for keeping the training area clean, so training can continue. See paragraphs 2-1g and 3-11.

#### 3-3. Hazardous conditions and control measures

HEAT trainees must be informed of any known hazardous conditions and control measures that exist in the training environment. Trainees must remove all watches and rings, any jewelry worn around the neck, and empty all pockets of pens, pencils, and pocket knives. Earrings should be removed to prevent inadvertent tearing of the earlobe during rollover and egress from the HEAT. Trainees should not bring pagers or cell phones into the trainer.

Trainees must be briefed of their responsibility to report any unsafe/unhealthy condition they may discover. The instructor will identify the location of emergency equipment, fire exits, and procedures to be used in the event of a fire, injury, or other emergency. In the event of an in-HEAT emergency (three blasts on the whistle or sounding of applicable alarm) trainees should exit the HEAT immediately and proceed to the pre-designated location. A single long blast means trainees should remain inside the HEAT and not open the doors.

### **3-4. Environmental exposure**

Aircrew members should not participate in flight duties for at least eight hours after completion of HEAT training to ensure stability in the otolith organs of the vestibular system (FM 3-04.301, *Aeromedical Training for Flight Personnel*, Chapter 9).

### **3-5. First aid treatment**

First aid treatment includes oxygen administration; treatment for shock; cardiopulmonary resuscitation, when needed; and transport to the nearest medical treatment facility in accordance with the HEAT Pre-Mishap Plan (see Appendix E).

### **3-6. Pre-training requirements**

Prior to engaging in HEAT training, personnel shall be proficient with the wear and operation of standard uniform and combat equipment worn in the theater and be familiar with survival, signaling, and rescue techniques appropriate to survival situations typical of disabled vehicles in the area of responsibility.

### **3-7. Emergency medical personnel**

There will be a minimum of one CLS on site during any operation of the HEAT. Ideally, CLS services will be provided by the unit undergoing the training. Emergency medical personnel with appropriate equipment and a suitable vehicle for transport will be readily available during all HEAT training. The absence of any criteria in this paragraph requires a reassessment of the risk (see Appendix H) and the approval of the appropriate authority.

### **3-8. TTO and DOR policies**

Prior to training, ensure each HEAT training participant understands the TTO and DOR policies (see Appendix D).

### **3-9. Safety reminder**

All personnel will be reminded that equipment damage, personal injury, and even death can result from carelessness, failure to comply with the approved procedure, or violations of warnings, cautions, and safety regulations.

### **3-10. HEAT location safeguards**

The HEAT location is a danger area. Isolate the HEAT from passersby, and position the trainer to avoid accidentally striking onlookers when in motion.

- a. Use theater ropes, cones, tape, etc. to completely cordon off the HEAT danger area by at least 30" on the longitudinal axis, widening to at least 36" around the doors. Include in the cordon any truck-borne/trailer-borne devices, plus the width/length of the truck/trailer.
- b. The floor around the HEAT shall be conspicuously taped in a bright color in the same silhouette dimensions as noted in paragraph 3-10a above. At no time shall personnel be permitted to move inside this danger area without the specific knowledge and permission of the lead HEAT instructor.
- c. The HEAT is grounded prior to operation IAW the approved HEAT operator's manual.
- d. The floor beneath the HEAT will have at least a six-inch thick cushion installed to provide fall protection from any HEAT opening used during egress. Alternatively, a safety net or suspension web can be installed between each of the HEAT's A-frame stands. The safety net or suspension web must be of sufficient height so as to not impede the rotation of the cab yet still arrest a fall from any HEAT opening used during egress.

### **3-11. Personnel physical requirements**

- a. Prior to their selection for HEAT training, the personnel officer (S-1) will review prospective trainee records for any profiles or medical conditions that may preclude their participation.
- b. Trainers will ensure each HEAT training participant is free of symptoms of motion sickness and any injuries resulting from the training. Symptoms of motion sickness may persist for as long as 12 hours after termination of training; therefore, all HEAT training participants will be required to remain in the immediate training area for at least ten minutes following training to observe for presentation of acute motion sickness symptoms.

### **3-12. Licensing and qualification/documentation**

Commanders will ensure adequate records of initial training and annual revalidation are maintained for each trainee on the optional form (OF) 346, U.S. Government Motor Vehicle Operator's Identification Card or equivalent, and DA Form 348, Equipment Operator's Qualification Record (except aircraft) or service equivalent.

- a. The HEAT will only be run by master driver trainers certified IAW AR 600-55, *The Army Driver and Operator Standardization Program (Selection, Training, Testing, and Licensing)* and MCO 11240.66, *Standard Licensing Procedures for Operators of Military Motor Vehicles*, and/or other applicable prescribing service directives.
- b. A statement of qualification to operate the HEAT will be made on the master driver trainer's OF 346 and DA Form 348 or service equivalents to show "HEAT Operation Qualified."

### 3-13. HEAT operator and HEAT examiner

Only master driver trainers certified IAW paragraph 3-12 above may operate the HEAT. HEAT operators must be trained and certified by competent personnel. As such, commanders must determine who is qualified to train the HEAT operator(s). Commanders may assign other competent personnel (military, civilian technician, or contractors) as HEAT examiners. Ideally, someone who is already a master driver trainer or has experience as an instructor or safety officer/NCO may be designated by the commander as a HEAT operator examiner. Examiners must be selected not only for their technical qualifications but also for their demonstrated performance, objectivity, and ability to observe and provide constructive comments. Qualification training for HEAT examiners will be conducted using the following guidance:

- a. Individuals conducting HEAT training must be trained by either another HEAT operator or HEAT examiner unless one does not exist. If a HEAT operator or examiner does not exist, the commander will designate competent personnel to train, evaluate, and certify each other for the initial designation. After the initial designation of a HEAT examiner, all other HEAT operators will be evaluated and certified IAW this paragraph.
- b. Initial qualification training will consist of, as a minimum, hands-on training of all tasks the operator is authorized to perform IAW the HEAT Training POI. Special emphasis will be placed on Academic and Performance Phase Learning Objectives (see Section 4) and appropriate PMCS (see Appendix I). Annually, all HEAT operators and HEAT examiners must demonstrate a working knowledge and understanding of the appropriate subject areas in the HEAT Training POI and the ability to administer the commander's HEAT training program.
- c. The initial/annual evaluation will determine the HEAT operator's ability to train other personnel and perform essential tasks to the prescribed standards. HEAT examiners may evaluate the HEAT operator(s) by observing the performance of the prescribed duties or by functioning as a crewmember undergoing HEAT training by the HEAT operator, in order to evaluate the effectiveness of the HEAT operator's instruction.
- d. HEAT operators and HEAT examiners will be certified IAW paragraph 3-12 above. In addition, HEAT examiners will be issued a DD Form 1902, Certificate of Qualification as evidence of their qualification and designation (see Figure 3-2).



CERTIFICATE OF QUALIFICATION	
1. Name ( <i>Last, First, Middle Initial</i> )	2. Organization
3. Title	4. Spec Standard
5. Name of Certifier ( <i>Last, First, Middle Initial</i> )	
6. Signature	7. Date
8. Expiration Date ( <i>YYYY/MM/DD</i> )	9. Card No.
10. Remarks	
DD Form 1902, May 91	

**Figure 3-2: DD Form 1902 is issued in addition to the OF 346 as unique evidence of the qualifications of the HEAT examiner**

#### **Section 4: HEAT Learning Objectives and POI**

This section outlines both the basic and detailed training criteria for the HEAT and guidance for adapting this training to operations and missions involving the HMMWV.

##### **4-1. HEAT set-up procedures (see Appendix K) and pre-operational use inspection of the HEAT (see Appendix I).**

- a. Demonstrate rollover of device while empty. Observe rollover rate and check for free-floating and unsecured obstacles within the device.
- b. Check that the taped-off danger area around and beneath the HEAT is clear, and only authorized personnel are within the clear area during HEAT operation.
- c. Inspect the seatbelts and restraints for condition, security, and ease of operation at each position in the HEAT.
- d. Ensure that the motor controls and electrical connections of the HEAT to the building's electrical outlets are secure and serviceable per theater safety standards.
- e. The senior HEAT instructor on duty will certify in the logbook that the daily and before-use checks for the device have been completed and that no weekly, monthly, quarterly, or annual inspections/services are overdue.



## 4-2. Terminal learning objective (TLO)

As an uparmored HMMWV crewmember, perform inspection, clearing, and egress procedures with the HEAT while wearing required combat equipment and adhering to applicable safety precautions and procedures outlined in this POI.

**Safety Note: The critical rollover angle for an uparmored HMMWV is 25 degree percent slope, less with loads with a high center of gravity.**

### a. Overview and general scheme of training.

(1) Training in the HEAT is normally conducted in phases, Primary, Intermediate, Advanced, and Refresher, as described in paragraph 4-4 and Table 3-1. Refresher training (as described in paragraph 2-3d) entails recurrence based upon the Advanced phase. Roll will vary either to the right or to the left.

HEAT Phase	Crew/Battle Drill Descriptions
<b>Primary (Crawl)</b>	<p>1. The first drill is for familiarization, pausing to highlight the 30- and 25-degree percent slope critical rollover angles. (The rollover controls will have 30 and 25 degree percent slope markings to tell the HEAT operator when those slopes have been reached, at which time he will inform the HEAT trainees of the degree percent slope).</p> <p>2. The second drill shall be a “dry run” – completely rolling over (inverted) – no actual release of the seatbelts or gunner’s harness will be made.</p> <p>3. The third drill entails inverting the device, with participants actually exiting the device, as though it had rolled on dry land.</p> <p>4. After the device returns to the upright position, crew rotates seats and re-enters the device – the fourth drill entails inverting the device, simulating a water entry.</p>

<p><b>Intermediate (Walk)</b></p>	<ol style="list-style-type: none"> <li>1. The first drill is a “dry run” – completely rolling over (inverted) – no actual release of the seatbelts or gunner’s harness will be made.</li> <li>2. The second drill entails inverting the device, with participants actually exiting the device, as though it had rolled on dry land.</li> <li>3. After the device returns to the upright position, crew rotates seats and re-enters the device – the third drill entails inverting the device, simulating a water entry.</li> <li>4. After the device returns to the upright position, crew again rotates seats and re-enters the device – the fourth drill entails darkening the room in which the device is operated, then inverting the device, simulating a rollover at night on dry land with driver side doors and gunner’s hatch blocked.</li> </ol>
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<b>Advanced (Run)</b>	<ol style="list-style-type: none"><li>1. The first drill entails inverting the device, with participants exiting the device, simulating a water entry.</li><li>2. After the device returns to the upright position, crew rotates seats and re-enters the device – the second drill entails darkening the room in which the device is operated. The instructor sounds an air horn and manually, using the HEAT controls, shakes the HEAT to simulate an explosion. The device is then inverted, simulating a rollover at night on dry land.</li><li>3. The third drill is like the second, except with the introduction of Styrofoam blocks to simulate ammo cans and debris in the vehicle – as is typical in a convoy or tactical mission. This drill simulates a night water immersion, and the right front door cannot be opened.</li><li>4. The fourth drill is the same as the third, except with the introduction of a wounded gunner with a simulated broken neck and back, who must be extracted from the night water immersion.</li><li>5. The final drill involves the HEAT rolling onto its right side with the vehicle commander (VC) simulating being knocked unconscious. The weight of the driver side doors will make them impossible to open. Crew must egress via the gunner's hatch or the cargo compartment door and extricate the unconscious VC.</li></ol>
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<b>Refresher/Recurrence</b>	<p>1. The first drill is a re-familiarization ride, pausing to highlight the 30- and 25-degree critical rollover angles. (The rollover controls have 30 and 25 degree percent slope markings to tell the HEAT operator when those slopes have been reached, at which time he will inform the HEAT trainees of the degree percent slope).</p> <p>2. The second drill entails darkening the room in which the device is operated. The instructor sounds an air horn and manually, using the HEAT controls, shakes the HEAT to simulate an improvised explosive device (IED) or blown tire. The simulator is then inverted, simulating a rollover at night on dry land.</p> <p>3. After the device returns to the upright position and the crew rotates seats and re-enters the device, the final drill mirrors the second, except:</p> <ul style="list-style-type: none"> <li>a. Styrofoam blocks are introduced to simulate ammo cans and debris in the vehicle, as is typical of most convoy or tactical missions.</li> <li>b. Drill simulates night water immersion.</li> <li>c. The right front door cannot be opened.</li> <li>d. The gunner has suffered a gunshot wound to the chest, and is immobile, and the VC (right front seat) has lost his right leg below the knee and is bleeding profusely.</li> </ul>
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**Table 3-1: HEAT Phase and Crew/Battle Drill Descriptions**

(**Note:** Units should man the HEAT in training IAW their standing operating procedure (SOP) as they would conduct combat convoy escort patrols (i.e., if the unit training in the HEAT has combat convoy escort patrols as one of their METL tasks and their SOP directs only a driver, VC and gunner in the vehicle, then their training should not include a back-seat crew during HEAT training).

(2) Units may opt to perform the Primary, Intermediate, and Advanced Phases of training in the same session, depending on the risk management assessment, availability of the HEAT, and the METL of the unit being trained. Since Table 3-1 assumes a certain lapse of time between each phase, certain accommodations should be made in the POI to reflect this accelerated approach. The HEAT instructor and master driver trainer are afforded discretion and operational flexibility in making such accommodations, and an adjusted POI is reflected in Table 3-2.

**Safety Note:** The POI shows the possibility of training Soldiers in all phases of the HEAT in one session. The medical risk information to accompany the composite risk decision of completing these three phases in one session must address the medical risks, since the training involves multiple full body inversions. Time between will vary and the Soldiers' bodies may not have time to adjust to this condition. Recommend reconsideration of a single day to train or include the requirement for more medical personnel to be present at the HEAT to more closely assess the Soldiers' medical conditions.

HEAT Phase	Crew/Battle Drill Descriptions
<p><b>Consolidated/Accelerated Primary (Crawl), Intermediate (Walk), and Advanced (Run).</b></p>	<ol style="list-style-type: none"> <li>1. The first drill is a familiarization ride, pausing to highlight the 30 and 25 degree slope percentage critical rollover angles.</li> <li>2. The second drill is a “dry run” – HEAT completely rolling over (inverted) – no actual release of the seatbelts is made.</li> <li>3. The third drill entails inverting the device, and participants actually exiting the device, as though it had rolled on dry land.</li> <li>4. After device is righted, crew rotates seats, and re-enters the device. Fourth drill entails inverting the device, simulating a water entry.</li> <li>5. After device is righted, crew rotates seats, and re-enters the device. Fifth drill entails darkening the room where the device is operated. The instructor sounds an air horn and manually through the HEAT rollover controls “shakes” the HEAT to simulate an IED or a blown tire. The device is then inverted, simulating a rollover at night on dry land.</li> <li>6. The sixth drill is like the second, except with the introduction of Styrofoam blocks to simulate ammo cans and debris in the vehicle – typical of most convoy or tactical missions. This drill simulates a night water immersion, and the right front door cannot be opened.</li> <li>7. The seventh drill is the same as the sixth except with the introduction of a wounded gunner with a simulated broken neck and back, who must be extracted from the night water immersion.</li> <li>8. In the final drill the HEAT rolls onto its side with the VC simulating being knocked unconscious and the driver side doors unable to be opened due to their weight. Crew must egress via the gunner's hatch or the cargo compartment door and extricate the unconscious VC.</li> </ol>
<p><b>Table 3-2: Consolidated/Accelerated HEAT Crew/Battle Drill Descriptions</b></p>	

(3) Each training phase is comprised of four stages: Academics, Observation, Training, and Debrief (see Table 3-3). Each stage involves five HEAT training participants and one instructor. While training with the HEAT is generally event-driven, approximate times in each stage are denoted in Table 3-3.

Stage	Approximate time
1. <b>Academics.</b> Classroom/briefing room setting with five crewmembers and an instructor. As the academics are completed, a new group of five crewmembers backfills the academics stage.	Including the written multiple-choice examination, approximate time is 25 minutes. Suggested total HEAT (course time): 25 minutes*
2. <b>Observation.</b> Entails moving to the HEAT device room, and observing the group undergoing training in the device. As the group of five in the HEAT completes their cycle, the observation group moves into the device.	Approximate time is 30 minutes. Suggested total HEAT (course time): 55 minutes*.
3. <b>HEAT (device) training.</b> Entails cycling through each of the seats/stations in the simulator, based on the phase(s) of training being conducted. As the device group vacates, they are backfilled by the Observation group.	Approximate time is 45 minutes. Suggested total HEAT (course time): 1 hour, 40 minutes*.
4. <b>Debrief.</b> As the group moves to the debrief, they are observed for signs of motion sickness, given final thoughts from the instructor to reinforce the training they have received, and asked their opinions of how to improve the training.	Approximate time is 10 minutes. Suggested total HEAT (course time): 1 hour, 50 minutes*.
* Stage 1 may be completed prior to arrival at the HEAT IAW paragraph 4-2a(2)(b) and Appendix K, effectively reducing total cycle time to one hour and 25 minutes. Approximately ten minutes should be added to Stage 2 for a safety briefing prior to boarding the HEAT.	

**Table 3-3: HEAT Training Stages and Approximate Timelines**

(a) Total cycle time for the HEAT is conservatively one hour and 50 minutes (for Table 3-1; Table 3-2 will require slightly more time, based on the event-driven training performed by the HEAT instructor).

(b) Provided the Academic portion of the training in Stage 1 is completed prior to arrival at the HEAT (as certified IAW Appendix L), total cycle time is then conservatively one hour and 35 minutes, allowing for a safety briefing in Stage 2 prior to boarding the HEAT.

(c) As a crew cycles out of Stage 1, it rotates to Stage 2, Stage 3, and Stage 4. Units and organizations involving more than five HEAT training participants rotate their crews into the cycle in groups of five.

(d) For quality control purposes, the same instructor should rotate through the entire HEAT cycle with the same team allowing for continuity and consistency in the training and concepts presented during each stage of the training.

(e) Cycle times are consistent for each phase of training.

b. The completion of the academics stage of any phase of training satisfies the academic prerequisite for any hands-on device training for one year.

c. Total HEAT participants in a given ten-hour duty day (discounting an hour for lunch) is about 100.

d. Total HEAT instructors required is four, one in academics, two on the HEAT device floor, and one in debrief.

e. Minimum HEAT instructors required to safely conduct training is two, one in academics and one on the HEAT device floor (debrief functions shift between the floor instructor and the academics instructor). If operating two HEAT devices in the same hangar/building, at least three instructors are required. One instructor can perform the academics for both devices. There must be an instructor with each device and the debrief function can alternate between the instructors.

**Safety Note: The senior HEAT instructor may augment (not substitute) the cadre with the use of safety observers briefed to perform that function (observers waiting to ride in the Heat or those crewmembers who have already undergone HEAT training).**

#### 4-3. Academic phase learning objectives

Trainees will be able to state and/or describe procedures relating to the following subjects: Proper pre-drive checks for the HMMWV (as they relate to the HEAT),



clearing the HEAT/HMMWV upon egress, checking for injuries, removing injured personnel, and accounting for personnel upon egress.

a. Students are encouraged to have completed:

(1) Selection, training, testing, and licensing in an Army motor vehicle/utility service vehicle, preferably the HMMWV, IAW Department of Defense (DOD) Instruction 6055.4, DOD Traffic Safety Program; AR 600-5; Air Force Instruction 91-207, U.S. Air Force Traffic Safety Program; or Marine Corps Order (MCO) 5100.19, Marine Corps Traffic Safety Program; and MCO 5110.1, Motor Vehicle Traffic Supervision.

(2) The Accident Avoidance Course, available on Army Knowledge Online (AKO) ([www.us.army.mil](http://www.us.army.mil)), or equivalent course, prior to undergoing training in the HEAT. This academic foundational instruction serves as a sound prerequisite for advanced driving skills.

(3) A hands-on course such as the Safe Driver Training Program prior to attending the HEAT training. This course, sponsored by Area Support Group-Kuwait and conducted by contracted instructors, is best seen as an effective prerequisite in learning how to avoid rollovers and rollover conditions in the HMMWV.

(4) It is desirable to have completed the HEAT Academics prior to arrival at the HEAT IAW paragraph 4-2a (2).

b. In a classroom with appropriate training aids available, instruction is provided on the inspection, use, and safety features of the HEAT. Video presentations may be used in conjunction with instruction.

c. Practical exercises shall be completed in the classroom with each HEAT training participant demonstrating the inspection and deployment of the HEAT. Each participant must pass a written test (see Appendix J) on the operation of the HEAT and egress procedures. A minimum score of 80 percent is required prior to attending the performance phase of training.

d. Before using any HEAT device, HMMWV crew members will be trained IAW this POI, particularly those portions that outline training, qualification, and recurrence/refresher courses. Persons completing a comparable formal course of instruction for HEAT qualification, that meets all the criteria in the HEAT training POI, may be certified at the commander's discretion.

#### **4-4. HEAT performance phase learning objectives**

Understand actions to take following rollover and escaping from the HMMWV.

a. When locked, the combat door locks on the M1114 uparmored HMMWV keep the enemy out but make it extremely difficult for rescuers to enter the vehicle. Commanders should determine when combat locks should be used when conducting operations near bodies of water. Also, consideration must be given to the inherent difficulty in opening an unlocked armored door that

is not designed to swing on an inverted hinge and the risk added to the assessment for such operations.

b. Work as a team. Maintain crew integrity and train as a team.

**Safety Note: Of all the vehicle occupants, the likelihood of injury to the gunner is disproportionately higher than those of the others. Knowing the fundamental purpose of the HEAT, those occupying the gunner position must exercise particular diligence in securing occupant restraints, bracing for the rollover, and be particularly mindful of the increased potential for head and neck injuries – even in the device. Further, those occupying the gunner position in the HEAT must verify prior to each rollover iteration that the gunner hatch locking mechanism remains secure, and avoid inadvertent disengagement of the lock during each rollover.**

(1) Know how to get out. Rehearse vehicle evacuation as if only one exit is available. Actual egress:

(a) **Brace** with one hand against the floor (this was originally the ceiling).

(i) Consider which hand you should brace with (reach your seatbelt with one hand and use the other hand to brace).

(ii) Do not unlatch your seatbelt without bracing on the floor. Your neck cannot support your body weight and battle gear.

(b) **Unfasten** your seatbelt with your other hand.

(i) Push against the floor with your bracing hand to release the tension on the seatbelt so it will unfasten.

(ii) Find the release button and press it firmly until it pops loose (be prepared to simulate cutting the seatbelt with a knife, if necessary)

(iii) Be prepared to fall when the belt unlatches. Tuck your head and protect your neck at all costs.

(c) **Slide** out of your seat and disconnect your headset.

(i) Remember that you cannot open the door while inverted.

(ii) Be aware of your buddies; do not kick them in the face.

(iii) Muzzle awareness at all times.

(iv) Be aware your gear may get caught on something.

(d) **Orient** yourself on the door.

(i) Dropping out of your seat is more disorienting than expected.

(ii) Get yourself right side up before worrying about the door.

(iii) Look at the door; consider how it will open now that it is inverted.

(e) **Unlock and open** the door. If it does not open, find a door that works. Recall whether your vehicle is one with two-stage combat locks or one-stage, and the differences it takes to open each.

(i) Armored doors weigh 240 pounds each and are not meant to be inverted.

(ii) The door may be difficult or impossible to open.

(iii) Once the latch is open, you will have to really lean into the door to get it opened; however, if your door is not opening, try another door!

(iv) When you open a door, shout “Open door (and the location)!”

(f) **Get out**, but do not let your fellow crewmembers down.

(i) Determine if all crewmembers are aware of the open door and whether they are moving toward it.

(ii) Determine if all crewmembers are conscious.

(iii) Consider the risks of moving injured Soldiers; do not make the situation worse, but do not leave them hanging upside down or in a position to drown.

(iv) Look before you leap; do not rush out the first door, only to fall off a cliff or thrust yourself into a burning fuel or oil slick.

(2) The gunner’s egress entails some specific and additional steps:

(a) Slide feet to the direction of roll, as the torso and legs are withdrawn to present the lowest possible profile.

(b) Depending on how the rear seats are occupied:

(i) When both rear seats are occupied, both rear seat occupants will maintain a firm grasp on the gunner, pulling the gunner down inside the vehicle through the turret. Assist in restraining the gunner throughout the rollover until the vehicle has come to a stop.

(ii) If only one rear seat is occupied, the back seat occupant will pull the gunner toward him, as described above.

(c) Unlatch the gunner's lanyard/harness and egress.

#### **4-5. HEAT rollover drill steps and performance measures**

Two HEAT instructors will be present at all times the device is in use. The front instructor (device operator) controls the electric motor for roll operations. Both operators will do a complete walk-around of the device prior to each roll to verify that doors are closed, gunner's hatch mechanism is locked, and crewmembers are in their seats with their seat belts securely fastened. Prior to device operation, both instructors will position themselves on opposite ends of the device, diagonally across from each other, to allow a clear and unobstructed view of both sides of the device to ensure doors remain closed throughout the roll cycle.

a. The VC position will always be manned if there is more than one person in the device. The VC is responsible for ensuring all personnel within the HEAT are buckled in, the gunner is properly restrained, and the combat locks are engaged on all doors.

b. The device operator calls out, "Pin is out; device is unlocked; clear front." The instructor positioned at the rear of the device responds, "Doors locked; clear in the back."

c. Once all positions report ready to the VC, the VC will give a thumbs-up sign to the primary HEAT instructor (switch operator) who will give a single blast on the whistle or horn to signal rotation. Only then is the device ready for operation.

d. Procedures for the use of the HEAT are per instructions in Appendix I. When the crewmembers are ready, the device operator rotates the simulator either to the left or to the right. Crewmembers should lower their chins to their chests, pull their arms across their chests, and brace their legs against the floor without locking their knees. Once the rolling has stopped and the device is in the desired position to complete the crew/battle drill, the primary instructor gives three blasts on the whistle/horn as the signal to egress.

Crewmembers will remain in the belted position until the device comes to a complete stop, and the primary instructor sounds the three blasts. Crewmembers should wait three to five seconds to orient themselves, brace against the ceiling with one hand, then release the lap belt with their other hand. Next, they will pull down free of the seat and rotate to a horizontal

face-down position while holding onto a reference point with both hands. The crew then proceeds with an egress per the scenario for the exercise.



## Appendix A

### Sample Risk Management Worksheet and Instructions

A-1. Instructions for completing DA Form 7566 (Composite Risk Management Worksheet) are in Table A-1.

Item	Instruction
1 through 4	Self-explanatory.
5	Subtask relating to the mission or task in Block 1.
6	Hazards – Identify hazards by reviewing mission, enemy, terrain, troops, and time available factors for the mission or task. Additional factors include historical lessons learned, experience, judgment, equipment characteristics and warnings, and environmental considerations.
7	Initial Risk Level – Includes historical lessons learned; intuitive analyses, experience, judgment, equipment characteristics and warnings; and environmental considerations. Determine initial risk for each hazard by applying risk assessment matrix (Figure 1-1). Enter the risk level for each hazard.
8	Controls – Develop one or more controls for each hazard that will either eliminate the hazard or reduce the risk (probability and/or severity) of a hazardous incident. Specify who, what, where, why, when, and how for each control. Enter controls.
9	Residual Risk Level – Determine the residual risk for each hazard by applying the risk assessment matrix (Figure 1-1). Enter the residual risk level for each hazard.
10	How to Implement – Decide how each control will be put into effect or communicated to the personnel who will make it happen (written or verbal instruction; tactical, safety, garrison standing operating procedures, rehearsals). Enter controls.
11	How to Supervise (Who) – This last step is not on the worksheet. Plan how each control will be monitored for implementation (continuous supervision, spot-checks) and reassess hazards as the situation changes. Determine if the controls worked and if they can be improved. Pass on lessons learned.
12	Was Control Effective – Indicate “Yes” or “No.”

13	Overall Risk Level – Select the highest residual risk level and circle it. This becomes the overall mission or task risk level. The commander decides whether the controls are sufficient to accept the level of residual risk. If the risk is too great to continue the mission or task, the commander directs development of additional controls or modifies, changes, or rejects the courses of action.
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**Table A-1: Worksheet Instructions**

A-2. The worksheet (Table A-1) provides a starting point to logically track the process of hazards and risks. It can be used to document risk management steps taken during planning, preparation, and execution of training and combat missions and tasks. It is a sample tactical road march scenario with a sample composite risk management (CRM) worksheet (not all inclusive of items that should be placed on a CRM worksheet).

## **Tactical Road March Scenario**

### **Conduct a tactical road march**

**Mission:** Detachment A 138 Finance Battalion conducts a tactical road march in order to relocate to a forward operating base (FOB) ST19003500 NLT 0300Z 16 Jul XX to establish a finance support operation for Multinational Brigade North.

**Situation:** The battalion S2 produced an intelligence preparation of the battlefield overlay indicating the presence of many known (marked) and unknown (unmarked) mine fields throughout the area with the mine fields spanning portions of the route of march. Intelligence indicates armed terrorists are operating in three-to-five person teams with rocket propelled grenade (RPG) and improvised explosive device (IED) capabilities. It is not known if these teams will fight if contact is made.

**Conditions:** As the commander of Detachment A, you have just received a warning order, 1400 hrs 14 July, from your battalion commander alerting you of the upcoming mission. The terrain consists of moderately rolling hills. The road network consists of unimproved roads with sharp curves and steep embankments, with numerous potential ambush sites. The weather has been in the mid-50s to 60s during the day and mid-40s at night. It has been raining for the last four days and rain is predicted to continue through the rest of the week.

### **Facts:**

- Detachment commander and sergeant have been assigned for the past 10 months.



- The detachment has been in theater the past four months, and is at 95 percent strength.
- The convoy will consist of seven uparmored high mobility multipurpose wheeled vehicles, all in good shape, to carry personnel, personal gear, and organizational equipment.
- Drivers and vehicle commanders are all experienced.
- Map recon indicates the FOB is thirty-five kilometers away.
- Aerial surveillance/coverage is not available.

**Mission, Enemy, Terrain and Weather, Troops and Support Available, Time Available, and Civil Considerations Analysis**

**Mission:** Conduct a tactical road march.

**Enemy:** Armed terrorists are operating in three-to-five person teams with RPG and IED capabilities. It is not known if these teams will fight if contact is made.

**Terrain:** The terrain consists of moderately rolling hills. The road network consists of unimproved roads with sharp curves and steep embankments, with numerous potential ambush sites.

**Troops:** Experience level is high. Detachment personnel have trained and worked as a team for the past 10 months.

**Time:** 27 hours to start point .

**Analysis:**

(1) Threat-based risk: Ambush and IED potential.

(2) Hazard-based risk:

Rain/cold  
Limited visibility  
Surface traction  
Road width, sharp curves, steep embankments  
Fatigue

COMPOSITE RISK MANAGEMENT WORKSHEET									
1. MSN/TASK: Conduct Tactical Road March			2a. DTG BEGIN: 141400JulXX		2b. DTG END: 160300JulXX		3. DATE PREPARED: 14JulXX		
4. PREPARED BY									
a. LAST NAME: Seprondi			b. RANK: CPT		c. POSITION: DET CDR				
5. SUBTASK	6. HAZARDS	7. INITIAL RISK LEVEL	8. CONTROLS	9. RESIDUAL RISK LEVEL	10. HOW TO IMPLEMENT	11. HOW TO SUPERVISE (WHO)	12. WAS CONTROL EFFECTIVE		
	Ambush/IED/Mines	E	Brief personnel on the threat. Request mine clearing team and place at front of convoy.	H	SOP/Rehearsal	CDR/SFC			
	Rain/Cold	M	Ensure all personnel have proper weather gear, clean dry socks, and gloves.	L	PCI/Rehearsal	CDR/SFC			
	Operations Under Limited Visibility (Night)	M	Reduce convoy speeds. Build in additional breaks to maintain convoy integrity.	L	SOP/Rehearsal	CDR/SFC			
	Surface Traction	H	Reduce convoy speeds. Build in additional breaks to maintain convoy integrity.	M	SOP/Rehearsal	CDR/SFC			
	Road Width, Sharp Curves, Steep Embankments	H	Reduce convoy speeds. Build in additional breaks to maintain convoy integrity.	M	SOP/Rehearsal	CDR/SFC			
	Fatigue	M	Rotate drivers and gunners. Build in additional breaks to reduce driver & gunner fatigue.	L	Battle Roster	CDR/SFC			
13. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED (Check one)									
<div style="display: flex; justify-content: space-between;"> <span>— LOW</span> <span><b>XX</b> MODERATE</span> <span>— HIGH</span> <span>— EXTREMELY HIGH</span> </div>									
DA FORM 7655, APR 2005									

## Appendix B


### GTA 55-03-030: HMMWV Uparmored Emergency Procedures Performance Measures

<p><b>GTA 55-03-030</b> For Official Use Only <b>HMMWV UPARMORED</b> <b>Emergency Procedures</b> <b>Performance Measures</b></p> <p><b>WARNING</b></p> <p>Never attempt to jump from a rolling vehicle. It may roll over you. Ensure that the vehicle has stopped rolling before exiting. Upon complete evacuation of the crew, vehicle should be inspected for fire hazards such as leaking oil, fuel, ammunition and hydraulic fluid. If hazardous/explosive materials are involved, driver must take actions according to the DD Form 836 accompanying load. Notify rescue personnel and remain at evacuation distance while securing accident site.</p> <p>20 May 05</p> <p>1.</p>	<p><b>PREVENTIVE MEASURES:</b></p> <p><b>Slow Down</b> - Watch for Sharp Curves and Steep Slopes - Curves and slopes generate centrifugal forces that act sideways on the vehicle, increasing the chance of rollover.</p> <p><b>Avoid panic-don't jerk the steering wheel:</b> Many rollovers occur when the driver panics / jerks the steering wheel during an emergency. At highway speed, jerking the steering wheel can cause loss of control and the vehicle may slide sideways and roll over.</p> <p><b>Know proper maneuvering:</b> If you drive off the roadway, gradually reduce speed. Ease your vehicle back onto the roadway at a safe speed.</p> <p><b>Use caution on rural roads/roads with soft or no shoulders:</b> When a vehicle goes off a road, the vehicle can overturn when it strikes a ditch or embankment, or is tripped by soft soil.</p> <p><b>Pay attention to vehicle condition, tire pressure and loading:</b></p> <ul style="list-style-type: none"> <li>● Pay particular attention to tire condition and air pressure during PMCS to reduce potential hazards. Worn / improperly inflated tires increase your risk of rollover.</li> <li>● Don't overload the vehicle. The M1114 payload is 2300 lbs. This includes the passengers, winch, gunners protection kit, spare tire, weapons, and all cargo!</li> <li>● Keep the Vehicle Center of Gravity Low. Load heavier items low in the vehicle.</li> </ul> <p>2.</p>
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<p>Increasing the height of the vehicle's center of gravity increases your risk of roll over.</p> <ul style="list-style-type: none"> <li>● Secure the Load. Improperly secured loads can shift and become hazards within the vehicle and increase the chance of rollover</li> <li>● Trailer Towing. Vehicles towing trailers are much more prone to roll over, especially in curves and during sudden steering maneuvers, as a result of the exaggerated motion of the trailer. Adjust speed accordingly.</li> </ul> <p><b>Work As A Team:</b> <b>Maintain Crew Integrity - train as a team</b></p> <p><b>Communicate</b> with the driver-tell the driver what is to the left, right, rear, and overhead. Your gunner is your eyes and ears! The gunner may be the only crew member capable of seeing around the entire vehicle. Use the vehicle intercom system to pass visual information to the driver, but rehearse shouted voice commands and hand signals in case the intercom is inoperative. Avoid hazards, use a ground guide whenever possible.</p> <p><b>Wear seatbelts.</b> Survive the rollover!</p> <p><b>Use combat locks-safely</b> - Combat locks help keep the doors closed in a crash, but are a hazard near water! Unlock combat door locks when near water (enemy situation permitting).</p> <p><b>Know how to get-out.</b> Rehearse vehicle evacuation as if only one exit is available.</p> <p style="text-align: right;"><b>3.</b></p>	<p><b>ROLLOVER DRILL TASK STEPS AND PERFORMANCE MEASURES:</b></p> <p><b>NOTE: <u>All personnel in a seat with restraints will wear them!</u></b></p> <p><b>1. Execute Rollover Drill:</b></p> <p><b>a. Driver--</b></p> <ol style="list-style-type: none"> <li>(1) Releases the accelerator.</li> <li>(2) Yells, "Rollover!"</li> <li>(3) Keep hands on the steering wheel tucks head and chin into chest and braces for impact.</li> </ol> <p><b>b. Vehicle Commander--</b></p> <ol style="list-style-type: none"> <li>(1) Yells, "Rollover!"</li> <li>(2) Pulls Gunner into cab.</li> <li>(3) Tucks head and chin into chest and braces for impact.</li> <li>(4) Plants feet firmly on the floor while holding onto a stationary object.</li> </ol> <p><b>c. Gunner--</b></p> <ol style="list-style-type: none"> <li>(1) Yells, "Rollover!"</li> <li>(2) Pushes/pulls self down into vehicle.</li> <li>(3) Tucks head and chin into chest and holding onto a stationary object, brace for impact.</li> </ol> <p style="text-align: right;"><b>4.</b></p>
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<p><b>ROLLOVER DRILL (CONT):</b></p> <p><b>d. Crew --</b></p> <ol style="list-style-type: none"> <li>(1) Yells, "Rollover!"</li> <li>(2) Pulls Gunner into cab.</li> <li>(3) Tucks head and chin into chest and braces for impact.</li> <li>(4) Plants feet firmly on the floor while holding onto a stationary object.</li> </ol> <p><b>2. After the rollover has stopped:</b></p> <p><b>a. Driver--</b></p> <ol style="list-style-type: none"> <li>(1) Disconnects headset.</li> <li>(2) Releases seatbelt; uses caution if upside down.</li> <li>(3) Assess injuries.</li> <li>(4) Unlocks combat door locks.</li> <li>(5) Exits the vehicle with weapon.</li> <li>(6) Assists crew to exit.</li> <li>(7) Checks for fire.</li> <li>(8) Provides security.</li> <li>(9) Provides first aid.</li> <li>(10) Recovers sensitive items.</li> <li>(11) Assists in vehicle recovery.</li> </ol> <p style="text-align: right;"><b>5.</b></p>	<p><b>ROLLOVER DRILL (CONT):</b></p> <p><b>b. Vehicle Commander--</b></p> <ol style="list-style-type: none"> <li>(1) Disconnects headset.</li> <li>(2) Releases seatbelt; uses caution if upside down.</li> <li>(3) Assess injuries.</li> <li>(4) Unlocks combat door locks.</li> <li>(5) Exits the vehicle with weapon.</li> <li>(6) Assists crew to exit.</li> <li>(7) Establishes security.</li> <li>(8) Accounts for sensitive items.</li> <li>(9) Reports accident.</li> <li>(10) Provides first aid.</li> <li>(11) Assists in vehicle recovery.</li> </ol> <p><b>c. Gunner--</b></p> <ol style="list-style-type: none"> <li>(1) Disconnects headset.</li> <li>(2) Assess injuries.</li> <li>(3) Clears and checks weapon for serviceability.</li> <li>(4) Exits vehicle with weapon.</li> <li>(5) Assists crew to exit.</li> <li>(6) Establishes security.</li> <li>(7) Recovers sensitive items.</li> <li>(8) Provides first aid.</li> <li>(9) Assists in vehicle recovery.</li> </ol> <p style="text-align: right;"><b>6.</b></p>
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<p><b>ROLLOVER DRILL (CONT):</b></p> <p><b>d. Crew--</b></p> <ol style="list-style-type: none"> <li>(1) Disconnects headset.</li> <li>(2) Releases seatbelt; uses caution if upside down.</li> <li>(3) Assess injuries.</li> <li>(4) Unlocks combat door locks.</li> <li>(5) Exits the vehicle with weapon.</li> <li>(6) Assists crew to exit.</li> <li>(7) Provides security.</li> <li>(8) Provides first aid.</li> <li>(9) Recovers sensitive items.</li> <li>(10) Assists in vehicle recovery.</li> </ol> <div data-bbox="899 1094 1209 1633">  </div> <p style="text-align: right;"><b>7.</b></p>	<p><b>MEDEVAC Request:</b></p> <p>Line 1: 6-digit UTM grid location of pick-up site.</p> <p>Line 2: Radio frequency, call sign and suffix of requesting personnel.</p> <p>Line 3: Number of patients by precedence: Urgent, Priority, and Routine. Urgent – loss of life or limb within 2 hours. Priority – loss of life or limb within 4 hours. Routine – evacuation within 24 hours.</p> <p>Line 4: Special equipment required. As applicable, express either none, hoist, or stokes litter.</p> <p>Line 5: # of patients by type (litter / ambulatory).</p> <p>Line 6: Security of pick-up site (What possible / known threat is in the area?).</p> <p>Line 7: Method of marking pick-up site (near / far recognition devices).</p> <p>Line 8: Patient nationality and status (Coalition Military, US Contractor, non-US Contractor, EPW).</p> <p>Line 9: NBC Contamination.</p> <p style="text-align: right;"><b>8.</b></p>
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<p><b>GTA 55-03-030</b> <b>July 2005</b> <b>For Official Use Only</b></p> <p><b>Water Egress</b> <b>HMMWV Uparmored Rollover</b> <b>Task and Performance</b> <b>Measures</b></p> <p>Combat door locks on the M1114 Uparmored HMMWV are designed to keep the enemy out. When they are locked, it is extremely difficult for rescuers to enter the vehicle! This problem may be compounded if damage occurs to the door as a result of an accident. Commanders should determine when combat locks should be used while conducting operations near bodies of water.</p> <p>9.</p>	<p><b>PREVENTIVE MEASURES:</b></p> <p>Always wear your seat belt to survive water entry and maintain orientation during a rollover.</p> <p>When in the vicinity of water and tactical conditions permit:</p> <ol style="list-style-type: none"><li>1. Reduce speed and bring vehicle to a halt.</li><li>2. Inform vehicle crew that you are operating around water hazards.</li><li>3. Assess terrain and route for hazards and discuss risk mitigating measures with crew before proceeding.</li><li>4. Unlock combat door locks.</li></ol> <p>10.</p>
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<p><b>WATER EGRESS DRILL TASK STEPS AND PERFORMANCE MEASURES</b></p> <p><b>When water entry is imminent:</b></p> <p><b>A. Driver--</b></p> <ul style="list-style-type: none"><li>(1) Releases the accelerator and controls the entry by steering into the body of water.</li><li>(2) Yells "WATER!"</li><li>(3) Keeps hands on the steering wheel with extended but not locked arms, tucks head and chin into chest and braces for impact.</li></ul> <p><b>B. Gunner--</b></p> <ul style="list-style-type: none"><li>(1) Yells "WATER!"</li><li>(2) Pushes / pulls self down into vehicle.</li><li>(3) Tucks head and chin into chest and holding onto a stationary object, braces for impact.</li></ul> <p>11.</p>	<p><b>WATER EGRESS DRILL TASK STEPS AND PERFORMANCE MEASURES</b></p> <p><b>When water entry is imminent:</b> (Continued)</p> <p><b>C. All other crew--</b></p> <ul style="list-style-type: none"><li>(1) Yells "WATER!"</li><li>(2) Pulls the gunner into the cab.</li><li>(3) Tucks head and chin into chest and braces for impact.</li><li>(4) Plants feet firmly on the floor while holding onto a stationary object.</li></ul> <p><b>M1114 Data:</b></p> <ul style="list-style-type: none"><li>Curb Weight: 9800 Lbs / 4447 kg</li><li>Payload: 2300 Lbs / 1043 kg</li><li>Gross Weight: 12,100 Lbs / 5489 kg</li><li>Max Towed Load: 4200 Lbs / 3175 kg</li></ul> <p><i>Max Safe Speed depends on surface conditions -- use your head!</i></p> <p>12.</p>
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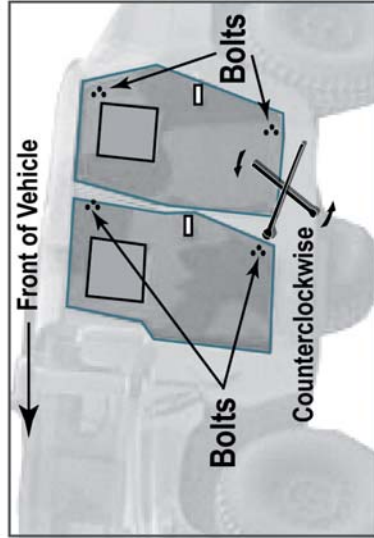
When the vehicle is stabilized:

All crew--

- (1) Disconnects headset.
- (2) Releases seatbelt; uses caution if upside down.
- (3) Exits the vehicle.
- (4) Assesses injuries.
- (5) Assists crew to exit and secure weapons.
- (6) Decides to remove personal equipment.
- (7) Gets to safest shore.
- (8) Establishes security.
- (9) Accounts for crew members.
- (10) Provides first aid.
- (11) Recovers weapons, ammunition and sensitive items.
- (12) Assists in vehicle recovery.

13.

## RESCUE WRENCH



1. Remove emergency rescue wrench from storage position.
2. Identify door that allows immediate access to conscious occupants.
3. Locate two groups of three bolts at the rear of each door.

Note: One bolt protrudes in each group

4. Remove countersunk bolts first then the protruding one. Complete one group at a time.

- Note: If bolt head breaks proceed to the next bolt, the door can still be opened.
5. Open door with handle.
  6. Proceed to next door.

14.

<p><b>WATER RESCUE / RECOVERY:</b></p> <ol style="list-style-type: none"> <li>1. Secure the accident site.</li> <li>2. Stay in contact with the vehicle, hold onto the vehicle and kick/swim to high point in buddy teams.</li> <li>3. Rescuers tie a rope / cable to the vehicle to aid in rescue.</li> <li>4. Open doors and hatches.</li> <li>5. If doors and hatches are not accessible, rescuers must immediately use all available means to turn the vehicle on its side to gain access to the turret.</li> <li>6. Seek out the highest point on/in the vehicle.</li> <li>7. Ensure that all survivors have air and are able to breathe.</li> <li>8. Check for other injuries and apply first aid.</li> <li>9. Carefully move injured personnel to the highest point on the vehicle.</li> <li>10. Remove excess equipment, to include body armor in deep water.</li> <li>11. Evacuate from vehicle high point to safest location, depending on: <ul style="list-style-type: none"> <li>• enemy situation.</li> <li>• water level and flow.</li> <li>• water temperature.</li> <li>• distance to waters edge.</li> <li>• anticipation of rescue.</li> </ul> </li> </ol> <p style="text-align: right;"><b>15.</b></p>	<p><b>REPORT THE INCIDENT/ACCIDENT:</b></p> <ol style="list-style-type: none"> <li>1. Who (Unit, Individual)?</li> <li>2. What (Accident or Combat)?</li> <li>3. Where (6-digit UTM grid)?</li> <li>4. How ( What caused the rollover, speed, visibility, cause of injuries or deaths)?</li> <li>5. Follow up initial report ASAP with information regarding: <ol style="list-style-type: none"> <li>a. Weather conditions.</li> <li>b. Seatbelts worn by each occupant.</li> <li>c. Fatigue / sleep prior to the accident.</li> <li>d. Was the driver able to see the hazard / other vehicle?</li> <li>e. Operator training / experience / license.</li> </ol> </li> <li>6. Complete Accident Report Form (DA Form 285 AGR) and forward to higher HQs.</li> </ol> <p>Information provided by:  U.S. Army Transportation School  Army Driver Standardization Office (ADSO)  705 Read Street  Ft Eustis, VA 23604</p> <p style="text-align: right;"><b>16.</b></p>
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## Appendix C

### HEAT Training Participant Screening Sheet

**Name: (*Last, First MI*):**

**SSN:**

**Rank:**

**Unit:**

**Age:**

**Date of Last Physical:**

**Training: Initial/Refresher**

**Medical Status (Profiles):**

*1. Are you presently under any medical treatment or have you been medically grounded (aircrews) in the last 30 days? If so, was it for any mechanical neck or back problems?	Y	N
*2. Have you had dental work done in the past seven days? (bridge work, dental plate, or dentures).	Y	N
*3. Have you had any back or joint trouble in the last 30 days?	Y	N
*4. For women: Are you or is there any possibility that you might be pregnant?	Y	N
*5. Have you previously requested to drop from any HEAT/egress training?	Y	N
**6. Do you have any physical condition which might be aggravated by this training?	Y	N
**7. Have you had any head, neck, back, or any major previous bone fracture?  a. If so, have you been released for such activity by a competent medical authority?	Y	N
**8. Is there any reason why you should not participate in training today?	Y	N
9. Have you been physically ill in the last two weeks?	Y	N
10. Have you taken any medications in the last 24 hours?	Y	N
11. Have you had any shots or immunizations in the past 12 hours?	Y	N

12. Have you donated blood in the last seven days?	Y	N
13. Have you had less than your normal amount of sleep in the last two nights?	Y	N
14. Have you had any alcohol in the last 12 hours?	Y	N
15. Have you changed your eating habits in the last 24 hours?	Y	N
16. Do you have any physical condition not noted above?	Y	N
17. Have you ever had a traumatic experience in a vehicle and/or do you have any fear associated with being in a tactical vehicle, such as a HMMWV?	Y	N
*Medical doctor review required                      **Master trainer review required		
<b>Note: If you marked yes to any one of these questions, please provide explanation in the remarks section identifying by number the question to which reference is made.</b>		

### Remarks

If my medical status should change during this course of training, I will immediately report my status to the lead HEAT instructor.

Signature

Date

## **Appendix D**

### **HEAT Drop On Request (DOR) and Training Time Out (TTO) Policies**

#### **Section D-1: Definitions**

- a. This course is designated as a low-to-moderate training event and is voluntary. With proper controls, the risk level is moderate. Accordingly, HEAT training participants have the option to individually request termination of training. Any time the crewmember makes a statement such as “I quit,” “DOR,” or words to that effect, the crewmember will immediately be removed from the training environment.
- b. A TTO may be called in any training situation whenever a HEAT training participant or instructor expresses concern or personal safety or when a need for clarification of procedures or requirements exists. TTO is also an appropriate means for a crewmember to obtain relief if they are experiencing pain, heat stress, or other physical discomfort.
- c. Any action that removes the HEAT training participant from the training area will be considered a TTO: for example, calling “time out” or “training time out,” crossing the hands in a “T” or raising a clenched fist overhead, or unscheduled or instructed egress from the device. When ready to return and upon approval of the Lead HEAT Instructor, the crewmember may be returned to the training event .

## Section D-2: Statement of Understanding

### STATEMENT OF UNDERSTANDING

I, (print name) \_\_\_\_\_, having been thoroughly briefed on the DOR and TTO policies, do fully understand these policies and their implications.

Signature

Date

### Privacy Act Statement

Under the authority of title 10 U.S.C., 1071-87 and 5031; 5 U.S.C. 301; Executive Order 9397, and the manual of the medical department, Article 4-5, information is required to screen you for training. The personal information will be used to determine the presence of any condition, which would contraindicate participation in egress training. The Social Security Number (SSN) is used only for report filing. Disclosure of requested information is voluntary to prevent illness or injury. Failure to provide the requested information may preclude participation in egress training and may warrant further medical evaluation.

This form shall be filed and maintained by the cognizant master driver trainer in accordance with AR 25-400-2, The Army Records Information Management System (ARIMS); AFD 37-1, Information Management; AFMAN 37-123, Management of Records; or Office of the Chief of Naval Operations Instruction (OPNAVINST) 5000.48, OPNAC Administrative Manual.

TTO/DOR

## Section D-3: HEAT TTO and DOR Policies

- a. All HEAT training participants shall be briefed on the TTO and DOR policy prior to the commencement of training.
- b. TTO. Crewmembers or instructors who have apprehension concerning their personal safety or that of another shall request a TTO to clarify the situation and receive or provide additional instruction as appropriate. Students who refuse to participate in the training exercise after TTO instruction has occurred will be removed from training. The safety officer (or officer in charge [OIC]) will forward the matter to the individual's command to determine the possibilities of retraining the crewmember at a future date.
- c. DOR. HEAT training participants are enrolled on a voluntary basis; therefore, crewmembers may voluntarily request termination of training. Any time a crewmember makes a statement such as "I quit" or "DOR," they

will be immediately removed from the training environment (HEAT, classroom). The safety officer will inform individual's command of his decision to DOR. When the crewmember exercises the option to DOR as stated above, the individual's supervisor will:

- (1) Counsel the HEAT training participant on the importance of the training and ascertain the reasons behind the request.
  - (2) Have the crewmember make a written request to terminate or continue training, which shall become a permanent part of their training folder.
  - (3) Following HEAT training participant's DOR, the safety officer (or officer in charge) is the only authority that may return the crewmember to training.
  - (4) Students who are returned to the training environment will be assisted in the program by the instructors until the crewmember's confidence level is restored or it is determined that the crewmember's participation in the program is no longer warranted.
- d. Student safety. Any time a HEAT training participant demonstrates signs of panic, fear, extreme fatigue, or lack of confidence, instructors will stop the training, identify the problem, and make a determination as to whether to continue. Instructors shall be constantly alert for any unusual behavior which may indicate that a crewmember is experiencing difficulty and will immediately take appropriate action to ensure the crewmember's safety.





## Appendix E

### HEAT Pre-Mishap Plan

**Instructions:** The blank spaces are to be completed prior to undertaking any training in the HEAT and this form should be conspicuously posted for ready reference in the event of a mishap.

#### 1. Non-HEAT related injuries

All injuries not associated with the device (HEAT) will be handled at the facility and transported (ambulance \_\_\_\_\_) to the nearest clinic or treatment center, as necessary.

#### 2. HEAT-related injury

HEAT impact injuries	HEAT non-impact injuries
Head injuries	Vision blurriness consistent with red-out (from inversion)
Neck injuries	Chest pain or headache (consistent with cardio distress or stroke)
Back injuries	Flank or chest pain
Partial or full paralysis	Numbness/tingling in extremities
Falls from height	Shortness of breath (dipnea)
Any neurological deficit	Any cut, abrasion, or bruise (not known to be from an impact)
Any cut, abrasion, or bruise (known to be from an impact)	Crushing, pinching, or punctures known not to be from an impact
Strike by a falling or flying object	

If a HEAT-related injury is suspected:

- (1) Administer first aid and, if available and necessary, oxygen by mask.
- (2) Call nearest medical evacuation unit (\_\_\_\_\_).

(3) Advise commander (\_\_\_\_\_), safety officer (\_\_\_\_\_), and nearest attending physician (\_\_\_\_\_).

3. Specify the type and cause (i.e., impact or non-impact) when calling for emergency medical services and reporting the mishap through the safety office.

4. All injuries, no matter how slight, must be reported. This reporting assists in developing the administrative and engineering controls necessary to avoid future mishaps. All damage to the device must be reported in accordance with Coalition Forces Land Component Command Pamphlet 385-95, paragraph 3-7.

## Appendix F

### HEAT Class E Mishap Reporting Form

(For use in reporting non-aviation mishaps costing the government less than \$2,000 or not otherwise qualifying as a Class D mishap. Not for use in reporting Class E Army aviation mishaps, which must be reported on a DA Form 2379-AB-R, Abbreviated Aviation Accident Report, in accordance with DA Pamphlet 385-40, Army Accident Investigation and Reporting).

<b>Security Classification of Form</b>	
1. Date and local time of mishap:	
2. Location of mishap (address, building number and installation, grid, etc.):	
3. Number of and type of injuries (e.g., "One cut finger"), if any. If more than one injured person, list them as "1," "2," etc. <b>Specify whether the injury is a HEAT impact or non-impact injury.</b> If no injuries, write "None."	
4. Rank and name of individuals involved in the mishap. Correspond to block 3 above (e.g., "1. SGT Adam Burkholder; 2b. SFC Richard Wolfe").	
5. Indicate any military or civilian equipment damaged and describe the damage. If none, write "None."	
6. Describe what happened and the events that led up to the mishap. Use additional sheets of paper if necessary.	

7. How do you think this mishap could have been prevented?	
8a. Rank and name of person reporting mishap:	
8b. Phone number (DSN or commercial) where you may be reached.	
<i>DO NOT WRITE BELOW THIS LINE – FOR USE BY SAFETY OFFICE(R).</i>	
9a. Rank and name of safety officer receiving and investigating mishap:	
9b. Date received:	
9c. Date investigation completed, filed:	
9d. Cross-referenced LODs or other mishap reports (e.g., SFs 91, AGARs):	

CFLCC Form 2850 1 Sep 05 V1.0

**Form Routing:** Unit safety officer reviews and completes form, routes through command channels to CFLCC Safety Officer (Office symbol: AFRD-SAFETY), Camp Arifjan, Kuwait APO AE 09306.

## Appendix G

### HEAT Comment and Feedback Card

1. We would like to hear how the HEAT training benefited you. What were your impressions immediately following a training session with the device? What, if any, practical experience did you gain in the weeks and months following your training?

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2. How did the training benefit you? \_\_\_\_\_

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3. What recommendations do you have to make the training better? \_\_\_\_\_

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4. Was the training realistic? \_\_\_\_\_

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5. Did this training change your perception of what a rollover accident would be like? If so, how? \_\_\_\_\_

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6. Did this training change any of your habits involving the operation of an Army motor vehicle? If so, which one(s)? \_\_\_\_\_

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7. Are you returning for Intermediate, Advanced, or Recurrent training? \_\_\_\_\_

8. HEAT training is conducted to save lives. From your experience, do you know of

an incident where the HEAT training paid off?\_\_\_\_\_

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Optional: Rank/Name:\_\_\_\_\_

Unit/Organization:\_\_\_\_\_

Date:\_\_\_\_\_ Email: \_\_\_\_\_

Mail completed form back to: CFLCC Safety Director (AFRD-SAFETY), Camp  
Arifjan, Kuwait APO AE 09306; or email (U) to [cflcc3afwdsafety@swa.army.mil](mailto:cflcc3afwdsafety@swa.army.mil).

## Appendix H

## HEAT Risk Management Worksheet

Risk Management Worksheet (JRTC and Fort Polk HEAT), JRTC and Fort Polk HMMWV Egress Assistance Trainer Usage SOP (The proponent of this form is Installation Safety Office)					
Organization and Unit Location HQ, JRTC & Fort Polk, G3/Training Division, Fort Polk, LA 71459		Page DTG End	1	of	4
Mission/Task HMMWV Emergency Egress Trainer (HEAT)		DTG Begin			
Operational Phase in which the Mission/Task will be conducted N/A, General Overview					
Prepared by: (Name/Rank/Duty Position) Koski, Walter A., SFC, JRTC And Fort Polk, G3, Training Division					
Identify Hazards	Assess the Hazards: Initial Risk	Developed Control Measures for Identified Hazards; (Specific measures taken to reduce the probability and severity of a hazard)	Make Risk Decisions: Remaining Risk	How to Implement the Controls: (Include SOPs, POI, References, etc.)	Supervision and Evaluation by: (Continuous, Leader Checks, Buddy System, SITREP, etc)
Scrapes and minor cuts from entering and exiting device.	L	<ul style="list-style-type: none"> <li>&lt;Soldiers wear uniform sleeves down and ballistic helmets when entering and exiting and at all times inside trainer.</li> <li>&lt;Designated Range Safety Officer (RSO), minimum rank E6, responsible for safety of training conduct.</li> <li>&lt;Mandatory Unit Safety Brief to all training event participants.</li> <li>&lt;This Risk Assessment signed by O-3 / CPT.</li> <li>&lt; Designated medic or Combat Lifesaver w/ aid bag and back board.</li> <li>&lt; Leaders PCI all Soldier to ensure all equipment (chin straps, ammo pouches, etc) is secured</li> </ul>	L	<ul style="list-style-type: none"> <li>&lt;JRTC &amp; FP Reg 385-4, Ch 8</li> <li>&lt;JRTC &amp; FP Reg 385-4, Ch 11</li> <li>&lt;JRTC and FP Reg 385-1</li> <li>&lt;JRTC &amp; FP Reg 385-5</li> </ul>	<ul style="list-style-type: none"> <li>&lt;Designated Unit Range Safety Officer.</li> <li>&lt;Leader Checks from OIC/NCOIC.</li> <li>&lt;Certified trainer on site at all times when training is conducted.</li> </ul>
Injuries due to falls from device.	M	<ul style="list-style-type: none"> <li>&lt;Designated Range Safety Officer (RSO), minimum rank E6, responsible for safety of training conduct</li> <li>&lt;Mandatory Unit Safety Brief to all training event participants</li> <li>&lt;This Risk Assessment signed by O-3 / CPT.</li> <li>&lt;Soldiers maintain a minimum of three points of contact while climbing in and out of trainer.</li> <li>&lt; Designated medic or Combat Lifesaver w/ aid bag and back board.</li> </ul>	L	<ul style="list-style-type: none"> <li>&lt;JRTC &amp; FP Reg 385-4, Ch 8</li> <li>&lt;JRTC &amp; FP Reg 385-4, Ch 11</li> <li>&lt;JRTC and FP Reg 385-1</li> <li>&lt;JRTC &amp; FP Reg 385-5</li> </ul>	<ul style="list-style-type: none"> <li>&lt;Designated Unit Range Safety Officer.</li> <li>&lt;Leader Checks from OIC/NCOIC.</li> <li>&lt;Certified trainer on site at all times when training is conducted.</li> </ul>

Organization and Unit Location HQ, JRTC & Fort Polk, G3/Training Division, Fort Polk, LA 71459		Page DTG End	2	of Date Prepared 4-Apr-06	4
Mission/Task HMMWV Egress Assistance Trainer (HEAT)		DTG Begin			
Operational Phase in which the Mission/Task will be conducted N/A, General Overview					
Prepared by: (Name/Rank/Duty Position) Koski, Walter A., SFC, JRTC And Fort Polk, G3, Training Division					
Identify Hazards	Assess the Hazards: Initial Risk:	Developed Control Measures for Identified Hazards; (Specific measures taken to reduce the probability and severity of a hazard)	Make Risk Decisions: Remaining Risk:	How to Implement the Controls: (Include SOPs, POI, References, etc.	Supervision and Evaluation by: (Continuous, Leader Checks, Buddy System,
Injuries due to body parts moving inside of trainer.	M	<p>&lt;Soldiers wear uniform sleeves down and ballistic helmets when entering and exiting and at all times inside trainer.</p> <p>&lt;Mandatory Unit Safety Brief to all training event participants.</p> <p>&lt;Soldiers with pre-existing limb, back or neck injuries barred from training.</p> <p>&lt; Leaders PCI all Soldier to ensure all equipment (chin straps, ammo pouches, etc) is secured.</p> <p>&lt;OIC/NCOIC verbally and physically verifies seatbelt usage prior to executing roll over maneuver.</p> <p>&lt;Soldiers instructed on proper bracing techniques during Safety Brief.</p> <p>&lt; Designated medic or Combat Lifesaver w/ aid bag and back board.</p>	L	<p>&lt;JRTC &amp; FP Reg 385-4, Ch 11</p> <p>&lt;JRTC and FP Reg 385-1</p> <p>&lt;JRTC &amp; FP Reg 385-5</p> <p>&lt;GTA 55-03-030</p> <p>&lt;HEAT POI</p>	<p>&lt;Designated Unit Range Safety Officer.</p> <p>&lt;Leader Checks from OIC/NCOIC.</p> <p>&lt;Certified trainer on site at all times when training is conducted.</p> <p>&lt; OIC/NCOIC v verifies that no Soldier has pre-existing neck or back injuries.</p>
Failure of pivot mechanism on trainer.	M	<p>&lt;Soldiers wear uniform sleeves down and ballistic helmets at all times while inside trainer.</p> <p>&lt;Weekly inspection by Installation Safety Office prior to use.</p> <p>&lt;Inspection by OIC/NCOIC/Trainer prior to each training use.</p> <p>&lt; Designated medic or Combat Lifesaver w/ aid bag and back board.</p>	L	<p>&lt;HEAT POI</p> <p>&lt;JRTC &amp; FP Reg 385-4, Ch 8</p> <p>&lt;JRTC and FP Reg 385-1</p> <p>&lt;JRTC &amp; FP Reg 385-5</p>	<p>&lt;Designated Unit Range Safety Officer.</p> <p>&lt;Leader Checks from OIC/NCOIC.</p> <p>&lt;Certified trainer on site at all times when training is conducted.</p> <p>&lt;Weekly ISO inspections.</p>



Organization and Unit Location HQ, JRTC & Fort Polk, G3/Training Division, Fort Polk, LA 71459		Page DTG End	3	of 4	Date Prepared 4-Apr-06
Mission/Task HMMWV Egress Assistance Trainer (HEAT)		DTG Begin			
Operational Phase in which the Mission/Task will be conducted N/A, General Overview					
Prepared by: (Name/Rank/Duty Position) Koski, Walter A., SFC, JRTC And Fort Polk, G3, Training Division					
Identify Hazards	Assess the Hazards: Initial Risk:	Developed Control Measures for Identified Hazards: (Specific measures taken to reduce the probability and severity of a hazard)	Make Risk Decisions: Remaining Risk:	How to Implement the Controls: (Include SOPs, POI, References, etc.)	Supervision and Evaluation by: (Continuous, Leader Checks, Buddy System,
Entanglements or strikes from trainer to Soldiers not undergoing training.	M	<ul style="list-style-type: none"> <li>&lt;Mandatory Range Control Brief and Unit Safety Brief to all participants.</li> <li>&lt;Designated OIC/NCOIC &amp; RSO, min rank E6, responsible for trng conduct.</li> <li>&lt;Units to control personnel movement</li> <li>&lt;Designated Safety Area around trainer.</li> <li>&lt; Designated medic or Combat Lifesaver w/ aid bag, neckbrace and back board.</li> </ul>	L	<ul style="list-style-type: none"> <li>&lt;HEAT POI</li> <li>&lt;JRTC &amp; FP Reg 385-4, Ch 11</li> <li>&lt;JRTC and FP Reg 385-1</li> <li>&lt;JRTC &amp; FP Reg 385-5</li> </ul>	<ul style="list-style-type: none"> <li>&lt;Designated Unit Range Safety Officer.</li> <li>&lt;Leader Checks from OIC/NCOIC.</li> <li>&lt;Designated Unit Range Safety Officer.</li> <li>&lt;Leader Checks from OIC/NCOIC.</li> <li>&lt;Certified trainer on site at all times when training is conducted.</li> <li>&lt;AI on rear side of trainer at all times</li> </ul>
Injuries due to armored doors slamming shut or flying open.	M	<ul style="list-style-type: none"> <li>&lt;Mandatory Range Control Brief and Unit Safety Brief to all participants.</li> <li>&lt;Designated OIC/NCOIC &amp; RSO, min rank E6, responsible for trng conduct.</li> <li>&lt;Units to control personnel movement</li> <li>&lt;Designated Safety Area around trainer.</li> <li>&lt; Designated medic or Combat Lifesaver w/ aid bag and back board.</li> <li>&lt;Doors dead bolted in place prior to rotating trainer back to up-right position.</li> <li>&lt;Soldiers taught proper hand and arm placement during roll-over.</li> </ul>	L	<ul style="list-style-type: none"> <li>&lt;HEAT POI</li> <li>&lt;JRTC &amp; FP Reg 385-4, Ch 11</li> <li>&lt;JRTC and FP Reg 385-1</li> <li>&lt;JRTC &amp; FP Reg 385-5</li> </ul>	<ul style="list-style-type: none"> <li>&lt;Designated Unit Range Safety Officer.</li> <li>&lt;Leader Checks from OIC/NCOIC.</li> <li>&lt;Certified trainer on site at all times when training is conducted.</li> </ul>

Organization and Unit Location HQ, JRTC & Fort Polk, G3/Training Division, Fort Polk, LA 71459		Page DTG End	4	of Date Prepared 4-Apr-06	4
Mission/Task HMMWV Egress Assistance Trainer (HEAT)					
Operational Phase in which the Mission/Task will be conducted N/A, General Overview					
Prepared by: (Name/Rank/Duty Position) Koski, Walter A., SFC, JRTC And Fort Polk, G3, Training Division					
Identify Hazards	Assess the Hazards: Initial Risk:	Developed Control Measures for Identified Hazards; (Specific measures taken to reduce the probability and severity of a hazard)	Make Risk Decisions: Remaining Risk:	How to Implement the Controls: (Include SOPs, POI, References, etc.)	Supervision and Evaluation by: (Continuous, Leader Checks, Buddy System,
Injuries to gunners and/or crewmembers from falling through open gunner hatch.	M	<ul style="list-style-type: none"> <li>&lt;Mandatory Range Control Brief and Unit Safety Brief to all participants.</li> <li>&lt;Designated OIC/NCOIC &amp; RSO, min rank E6, responsible for trng conduct.</li> <li>&lt;Gunners secured by gunner safety strap.</li> <li>&lt;All crewmembers wear their individual seat belts.</li> <li>&lt;AI maintains constant watch on gunner hatch for portuding body parts or personnel.</li> </ul>	L	<ul style="list-style-type: none"> <li>&lt;HEAT POI</li> <li>&lt;JRTC &amp; FP Reg 385-4, Ch 11</li> <li>&lt;JRTC and FP Reg 385-1</li> <li>&lt;JRTC &amp; FP Reg 385-5</li> <li>&lt;GTA 55-03-030</li> </ul>	<ul style="list-style-type: none"> <li>&lt;Designated Unit Range Safety Officer.</li> <li>&lt;Leader Checks from OIC/NCOIC.</li> <li>&lt;Certified trainer on site at all times when training is conducted.</li> <li>&lt;AI on rear side of trainer at all times</li> </ul>
Remaining Risk Level After Countermeasures are Implemented:		LOW	MEDIUM	HIGH	EXTREMELY HIGH
<b>RISK DECISION AUTHORITY:</b> (If Initial Risk Level is High or Extremely High, Brief Risk Decision Authority at that level on Controls and Countermeasures used to reduce risks.) Signature indicates only that the appropriate risk decision authority was notified of the initial risk level, control measures taken and appropriate resources requested. Commanders may add Controls and Countermeasures as they see fit but at a minimum must follow the Controls and Countermeasures listed in this Risk Assessment.		Signature Block of First O-3 in Chain of Command			
EXTREMELEY HIGH RISK REQUIRES APPROVAL BY FIRST GENERAL OFFICER IN CHAIN OF COMMAND					
FP Form 64-F 1 Aug 2002					

## Appendix I

### HEAT Preventive Maintenance Checks and Services (PMCS) Checklist

**Daily, before each use**

Check or Service	√ Complete
<b>Check electric rotator motor and rotation mechanism:</b>	
Check that hold-down bolts are tight.	
Check (two each) set screws that hold the woodruff key on the motor are tight; check slippage marks.	
Check motor base free play.	
Check motor shaft wear.	
Check drive sprocket for abnormal wear.	
<b>Check condition and security of rotator gearbox /pivot points:</b>	
Check mechanism base free play.	
Check no rotational free play in the rotator shaft.	
Check front rotisserie plate bolts tight, and no free play.	
Check rotation lock (pin) functions properly and is secure.	
Check rear rotisseries plate bolts tight and no free play.	
Check for any lengthening of bolt heads or elongation of holes, sheared bolt heads or missing bolts, cracking welds, stretching metal or other signs of metal fatigue.	
<b>Troop platform:</b>	
Check ladders and ladder brackets for broken brackets, cracking welds.	
Check troop platform cage for separations, sharp edges or areas where fingers could become trapped or twisted.	
Check availability of motion sickness bucket(s).	
Check support brackets and bracket mounts for cracks, and secure fitting.	

<b>Troop platform lifting winch:</b>	
Ensure winch is operating properly.	
Check connection points to troop platforms.	
Check winch hold-down bolts for wear or looseness.	
<b>HEAT base: Check for any lengthening of bolt holes and heads, sheared bolt heads or missing bolts, cracking welds, stretching metal or other signs of metal fatigue.</b>	
<b>HEAT cab (exterior): Check if door handles function properly.</b>	
<b>HEAT cab (interior):</b>	
Seatbelts present, operational, and free of fraying.	
Seat pads serviceable and properly installed.	
Steering wheel has no side-to-side free play.	
Check for installation, security, cleanliness of gunner lanyard*/harness (no fraying, and surety of latch, clasp, or carabiner).	
Interior clean and free of loose objects and dirt or dust that could cause eye injury.	
Door lock mechanisms fully functional and lock properly.	
Combat door locks lock and unlock freely.	
Padding for interior mock-up of communications devices not torn.	
Interior mock-ups are securely mounted and have no free play.	
Mock (Styrofoam) coolers, ammo cans, etc., are available to ensure proper placement and condition.	
Interior cab padding (walls and ceiling) is securely fastened and not torn.	
Windows are in the up position and locked.	
Check for any sharp edges on all surfaces within the cab.	
Check availability of motion sickness bags.	

<b>General:</b>	
Check availability of program of instruction.	
Check placement of safety zone (30" and 36") markings on floor around device.	
Verify placement of padding at least 6" thick, or a safety/suspension web beneath the device. Padding/webbing must be installed so as to effectively arrest any fall from the cab of the device.	
Check availability of serviceable fire extinguisher, and that hangar/building is generally safe for device use.	
Verify the device has been properly grounded in accordance with (IAW) Training Circular 11-6.	
Check generator fuel, oil, and coolant fluid levels and general serviceability of the generator.	
Complete the blank spaces in the HEAT Pre-Mishap Plan (Appendix E) and ensure it is posted in a conspicuous location for immediate reference.	

\*1,000 lb.-test lanyard (preferred).

### Daily, during each use

Check or Service	√ Complete
<b>Check rotator electric motor for any signs of motor overheating.</b>	
<b>HEAT cab (interior):</b>	
Check that door lock mechanisms are fully functional and lock properly.	
Check that combat door locks lock and unlock freely.	
Check for any signs of motion sickness or other fluid excretion.	

**Daily, after each use**

Check or Service	√ Complete
<b>Check electric rotator motor and rotation mechanism.</b>	
Check drive sprocket for abnormal wear.	
Check motor base free play.	
Check (two each) set screws on that hold the woodruff key on the motor are tight; check slippage marks.	
Check the rotator gear box lubricant level (remove access plate).	
Empty motion sickness bags, bucket(s) as necessary. Clean and wipe down interior after evidence of sickness.	

**Weekly**

Check or Service	√ Complete
<b>Change rotator mechanism gearbox fluid (80W-90).</b>	
Lubricate:	
Front rotator mechanism (80W-90).	
Rear rotisserie (axle grease – inject grease until excretion is evident).	
Troop platform pivot points (light lubricant spray).	
The rear rotisserie zerk fitting.	
Training platform pivot points (light lubricant spray).	
HEAT base training platform pivot points (light lubricant spray).	
Combat lock mechanisms.	
<b>Check the rotator gearbox and pivot points (remove access plate).</b>	
<b>Check condition and security of electrical connections, cables, etc. from electrical source (battery or wall plug) to electric rotator motor.</b>	

<b>Check battery for service level and terminals for evidence of corrosion.</b>	
<b>Vacuum and wipe down interior (HEAT cab)</b>	
<b>Clean glass windows</b>	

**Monthly**

<b>Check or Service</b>	<b>√ Complete</b>
<b>Lubricate:</b>	
All door hinges (light lubricant spray).	
Door locks (light lubricant spray).	
Combat locks (light lubricant spray).	
Seatbelt mechanisms (graphite or other light lubricant spray).	
<b>Service generator IAW applicable training manual (TM), technical order, lube order, etc.</b>	

**Quarterly**

<b>Check or Service</b>	<b>√ Complete</b>
<b>Wire brush worn and rusted spots – apply touch-up paint as necessary.</b>	
<b>Service generator IAW applicable TM, technical order, lube order, etc.</b>	

**Annually**

Check or Service	√ Complete
<b>Examine rotator mechanism electric motor brushes and armature; replace as necessary.</b>	
<b>Service generator IAW applicable TM, technical order, lube order, etc.</b>	



## Appendix J

### HEAT Written Examination

#### HEAT Test #1

1. An M1114, with a normal center of gravity (cg) and normal load, can operate on slopes of up to:
  - a. 20 degrees.
  - b. 25 degrees.
  - c. 30 degrees.
  - d. 98.6 degrees.
2. The critical (rollover) angle for an uparmored high mobility multipurpose wheeled vehicle (HMMWV) is:
  - a. 20 degrees.
  - b. 25 degrees.
  - c. 30 degrees.
  - d. 98.6 degrees.
3. The corrective action before reaching the critical rollover angle is to:
  - a. Jerk the wheel back to the center of the road.
  - b. Have all occupants yell, "Water!"
  - c. Gradually reduce speed and ease the vehicle back onto the roadway at a safe speed.
  - d. Secure the coolers and secure voice radios.
4. During egress, you find the door you're attempting to exit won't open. You should:
  - a. Inflate your water wings, kick out the windshield, and swim away from the enemy.
  - b. Don't panic – find a door that works.
  - c. Stay put and call the auto club.
  - d. Stay put and call quick reaction forces on the secure voice radio.

5. What is the personal protection equipment (PPE) requirement for driving an Army tactical vehicle?
- a. Kevlar and full body armor – even if only going to the post exchange.
  - b. Kevlar and other armor as directed during the mission brief.
  - c. Battle dress uniforms and physical training shoes.
  - d. None. PPE interferes with egress from the HMMWV.
6. What are the egress actions for the gunner following a rollover on dry land?
- a. Disconnect headset, assess injuries, clear and check weapon, exit vehicle with weapon.
  - b. Assist crew to exit, establish security, recover sensitive items, provide first aid, assist in vehicle recovery.
  - c. a and b above.
  - d. None of the above. Leap from the vehicle before it rolls.
7. What are the immediate actions of the driver should an entry into the water be imminent?
- a. Release the accelerator, yell “Water!”, and keep hands on the steering wheel.
  - b. Tuck head and chin into chest and brace for impact; and steer vehicle to control entry into the water to prevent rollover.
  - c. a and b above.
  - d. None of the above. Leap from the vehicle before it hits the water.
8. Prior to releasing your seatbelt for egress, and immediately afterward, you must:
- a. Brace with one hand against what was the ceiling (consider which hand you should brace with); unfasten your seatbelt with the other hand.
  - b. Unfasten your seatbelt with the other hand, pushing firmly until it pops loose. You may have to push against the floor with your bracing hand to allow the seatbelt to unfasten.
  - c. a and b above.
  - d. None of the above. Take out your k-bar and cut the thing off.

9. How much does the HMMWV armored door weigh?
  - a. 3,175 kg.
  - b. 2,300 lbs.
  - c. 25°.
  - d. 240 lbs./109 kg.
10. What is the purpose of the combat door lock?
  - a. To prevent aggressors from entering the vehicle in a hostile area.
  - b. It interfaces with the Lojack circuitry, and assists police in recovery of a stolen HMMWV.
  - c. It jettisons the door if moisture is detected during a water entry.
  - d. There is no difference between a combat door lock and a conventional door lock.
11. When operating near bodies of water or crossing bridges, the HMMWV crew should:
  - a. Inform crewmembers of the water hazard, loosen seatbelts, slow down.
  - b. Identify water hazards, unlock combat locks, remove seatbelts, slow down.
  - c. Slow down, inform crewmembers of possible water hazards, unlock combat locks (enemy situation permitting).
  - d. Look for alternate routes.
12. To reduce the risk of being involved in a rollover, HMMWV crews should:
  - a. Check tires for proper inflation and serviceability, and slow down.
  - b. Slow down, don't overload the vehicle, check condition and serviceability of tires, secure loads.
  - c. Ensure operators are properly licensed.
  - d. Limit crews operating in the vehicle to four or less.
13. What can a gunner do to minimize injuries when involved in a rollover?
  - a. Try to jump away from the vehicle.
  - b. Lower himself and brace for impact.

- c. Yell “Rollover!” while lowering himself into the vehicle, bracing for impact.
- d. Call the automobile club and complain about that last sharp curve in the road.

14. What preventive measures can be taken to minimize the chances of being involved in a rollover?

- a. Make a detailed Power Point presentation of any sharp curve in the road for emailing to your congressman in a formal yet anonymous complaint.
- b. License and certify all crews on the HEAT and train as a team.
- c. Slow down, avoid panic, know proper vehicle maneuvering, use caution in rural areas with soft shoulders, and identify water hazards.
- d. None of the above – only tracking your number of days left in country will help.

15. Other than the driver and gunner, what are the duties of the crew in the event of a rollover?

- a. Yell “Rollover!”
- b. Grab the gunner and pull him into the crew compartment.
- c. Brace for impact.
- d. All of the above.

## **HEAT Test #1**

### **Answer Key**

1. c
2. b
3. c
4. b
5. b
6. c
7. c
8. c
9. d
10. a
11. c
12. b
13. c
14. c
15. d



## Appendix K

### HEAT Set-Up Procedures

Set-Up Procedures for the HEAT	Date:	
Procedure/Step	√ Complete	√ Verified
1. Drive HEAT prime mover to desired location.		
a. Chock trailer wheels.		
b. Install support blocks.		
2. Disconnect the trailer from the prime mover.		
a. Lower the front of the trailer onto support blocks.		
3. Install steps at the rear of the trailer/front of the HEAT.		
4. Inspect the winch cable, cable clamp(s), pulleys, and troop platform attachment bolt(s) for any damage.  <b>Note:</b> If any damage is found, do not attempt to raise the troop platform.		
5. Winch one of the two platforms to the horizontal position.		
a. Insert the long end of the support bar into the front-most bracket (furthest from the winch) on the troop stand; insert the short end of the support bar into the bracket on the base.  <b>Note:</b> Do not allow anyone under the troop platform until the first support bar is in place.		
b. Lower the platform slightly using the winch and insert the long end of another support bar into the middle bracket on the troop stand. If the troop stand needs to be raised or lowered slightly to accomplish this, use the winch.		



c. Repeat the process from 5b above with the third support bar at the (rear) brackets nearest the winch.		
d. Once all three support bars are in place, lower the winch to take the tension off the cable. If the support bars are not firmly seated, tap them with a rubber mallet to seat them completely.		
6. Repeat step 5 and sub-steps for the opposite-side troop stand.		
7. Install the steps from the trailer to the HEAT front platform.		
8. Remove the three safety pins from the base hinges on the side rail and raise the side rail to the horizontal position.		
a. Re-pin the side rail, ensuring the safety pin ball catches are properly free of the hinge, and the pins are locked.		
9. Repeat step 8 and sub-steps for the opposite side rails.		
10. Install the troop platform front rails.		
11. Install the troop platform rear chains.		
12. Remove the four travel braces from under the corners of the HEAT.		
13. Install floor safety zone tape stripes (30" – 36").		
14. Plug device into electrical source and secure cord to prevent trip hazard as required.		
a. Ground device in accordance with TC 11-6.		
15. Secure serviceable fire extinguisher(s), and ensure remainder of hangar/building is safe for device use.		

16. Fill in the blank spaces in the HEAT Pre-Mishap plan in Appendix E of this handbook, and post in a conspicuous location for immediate reference.		
a. Photocopy sufficient copies of the Coalition Forces Land Component Command Class Mishap Form (Appendix F of this handbook) and keep forms in a common area for ready access.		
17. Conduct preventative maintenance checks and services following the steps in Appendix I of this handbook		



## Appendix L

### HEAT Sample Certification of Completion of Training Memorandum

#### Memorandum for CFLCC C-3 HEAT master driver trainer

Subject: (U) Certification of Completion of HEAT Academics Training and Testing

1. During the mobilization training of this Aviation Classification Repair Activity Depot (AVCRAD), all wheeled vehicle operators were satisfactorily trained in HMMWV Egress Assistance Trainer (HEAT) academics, in accordance with Coalition Forces Land Component Command (CFLCC) TC 21-305-4.1, paragraph 4-3. This training was conducted to the HEAT program of instruction, dated 26 January 2006, as forwarded by CW5 Dean E. Stoops shortly after our mobilization. Each attendee of this training successfully passed a written examination, as required in CFLCC TC 21-305-4.1, Appendix H; and the 1101st AVCRAD master driver trainer has endorsed each driver's OF 346 with "HEAT Academics Complete" (or similar entry).

2. A record of completion of this academic block of instruction and successful completion of the written examination has also been noted on each driver's DA Form 348, which satisfies the prerequisite to attend the hands-on training in the HEAT. A copy of these records will be brought with our master driver trainer during our transit of the Udairi Training Complex into the theater of operation, and will be available for your review upon request.

3. Point of contact for this certification is the undersigned at DSN 312 204-1110; or the 1101st AVCRAD master driver trainer, CSM Merritt L. C. Whitelaw IV, at DSN 312 204-2221.

(Signature Block)

Distribution: Commanding  
CFLCC C-3 HEAT master driver trainer  
1101st AVCRAD master driver trainer  
file



## Appendix M

### References and Resources

#### References

**Section 1. Required Publications. Publications are current as of publication date of this handbook, but are subject to change.**

- a. CFLCC Training Circular 21-305-4.1: *Tactics, Techniques and Procedures (TTPs), Program of Instruction (POI), and Crew/Battle Drills for High Mobility Multipurpose Wheeled Vehicle (HMMWV) Egress Assistance Trainer (HEAT).*
- b. FM 21-305: *Manual for the Wheeled Vehicle Driver.*
- c. FM 4-01.45: *Multi-Service Tactics, Techniques, and Procedures for Convoy Operations*
- d. FM 5-19 (draft) (FM 100-14): *Composite Risk Management.*
- e. TM 9-2320-387-10: *Operator's Manual for the M1113 and M1114.*
- f. TM 9-2320-280-10: *Operator's Manual for the M998 through M1035.*
- g. TC 21-305: *Training Program for Wheeled Vehicle Accident Avoidance.*
- h. TC 21-305-4: *Training Program for High Mobility Multipurpose Wheeled Vehicle.*
- i. GTA 55-03-030, *Uparmored HMMWV Emergency Procedures, Performance Measures, and Water Egress Task and Performance Measures.*

**Section 2. Related Publications and Forms. The following publications are sources of additional information:**

- a. AR 385-10: *The Army Safety Program.*
- b. AR 385-40: *Accident Reporting and Records.*
- c. AR 385-55: *Prevention of Motor Vehicle Accidents.*
- d. AR 600-55: *The Army Driver and Operator Standardization Program (Selection, Training, Testing, and Licensing).*
- e. DA Pamphlet 385-40: *Army Accident Investigation and Reporting.*
- f. U.S. Army Combat Readiness Center Ground Video “*Letters From War: UpArmored HMMWV Rollovers* (FOUO - AKO Login Required)” – CSM Butler, rollover survivor, 16th MP Bde (ABN) Fort Bragg, NC.

- g. CALL Handbook No. 04-27: *Convoy Leader Training*.
- h. CALL Handbook No. 04-24: *USSOCOM Combat Convoy*.
- i. Handbook No. 06-01: *Combat Logistics Patrols Tactics, Techniques, and Procedures, 142nd Corps Support Battalion*.
- j. JRTC and Fort Polk HEAT Usage SOP.

## Resources

- 1. <http://call.army.mil> (Center for Army Lessons Learned – NIPR site).
- 2. <https://call.army.smil.mil> (Center for Army Lessons Learned – SIPR site).
- 3. <http://www.mccll.usmc.mil> (Marine Corps Center for Lessons Learned – NIPR site).
- 4. <https://mccll.usma.smil.mil> (Marine Corps Center for Lessons Learned – SIPR site).
- 5. <https://crc.army.mil> (U.S. Army Combat Readiness Center – NIPR site).

**CALL PUBLICATIONS INFORMATION PAGE**

In an effort to make access to our information easier and faster, CALL has put all of its publications, along with numerous other useful products, on a Web site. The CALL Web site is restricted to Department of Defense personnel. The URL is <http://call2.army.mil>.

If you have any comments, suggestions, or requests for information, you may contact CALL by using the Web site "Request for Information or a CALL Product" or "Give Us Your Feedback" links at <http://call.army.mil>. We also encourage Soldiers and leaders to send in any tactics, techniques, and procedures (TTP) that have been effective for you or your unit. The TTP may be sent to us in draft form or fully formatted and ready to print. Our publications receive wide distribution throughout the Army, and CALL would like to include your ideas. Your name will appear in the byline.

**If your unit has identified lessons learned or tactics, techniques, and procedures, please contact CALL using the following information:**

**Telephone:** DSN 552-9569/9533; Commercial 913-684-9569/9533

**Fax:** DSN 552-4387; Commercial 913-684-4387

**NIPR Email address:** [call.rfimanager@leavenworth.army.mil](mailto:call.rfimanager@leavenworth.army.mil)

**SIPR Email address:** [call.rfiagent@leavenworth.army.smil.mil](mailto:call.rfiagent@leavenworth.army.smil.mil)

**Mailing Address:** Center for Army Lessons Learned, ATTN: OCC, 10 Meade Ave., Bldg 50, Fort Leavenworth, KS 66027-1350.

**If you would like copies of this manual or have a request for information (RFI), please submit your request at NIPR: <http://call.army.mil> or SIPR: <http://call.army.smil.mil>.** Use the "Request Information or a CALL Product" link. Please fill in all the information to include unit name and official military address. Please include building number and street for military posts.

Additionally, we have developed a repository, the CALL Archives, that contains a collection of operational records (OPORDS and FRAGOS) from recent and past military operations. Much of the information in the CALL Archives is password-protected. You may obtain your own password by accessing our Web site and visiting the CALL Archives page. Click on "Restricted Access" and "CALL Archives Access Request." After you have filled in the information and submitted the request form, we will mail you a password. You may also request a password via STU III telephone or a SIPRNET e-mail account.



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***News From the Front:*** This product contains information and lessons on exercises, real-world events, and subjects that inform and educate Soldiers and leaders. It provides an opportunity for units and Soldiers to learn from each other by sharing information and lessons. *News From the Front* can be accessed from the CALL Web site.

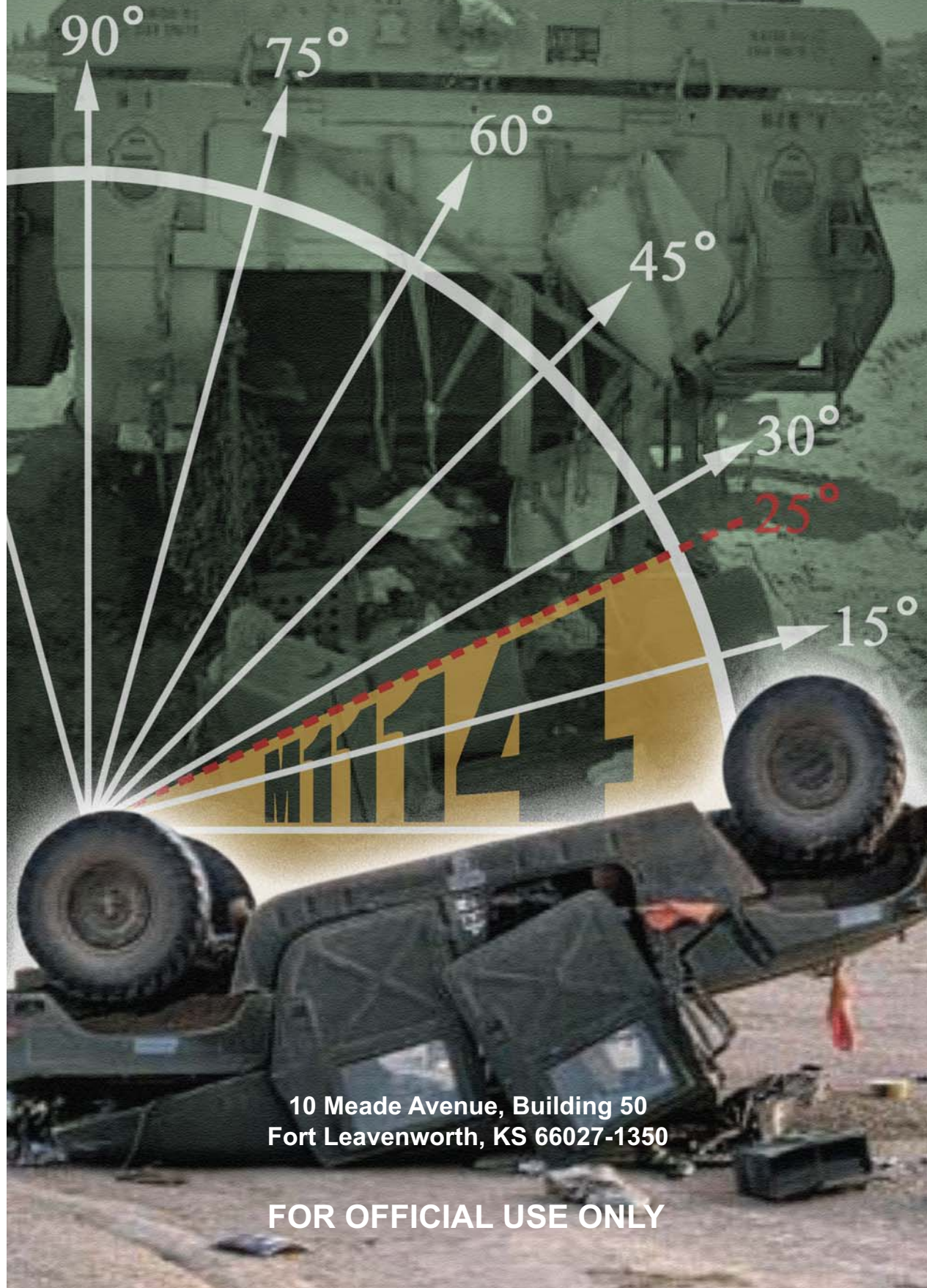
**Training Techniques:** Accessed from the CALL products page, this online publication focuses on articles that primarily provide TTP at the brigade and below level of warfare.

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***Support CALL in the exchange of information by telling us about your successes so they may be shared and become Army successes.***

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